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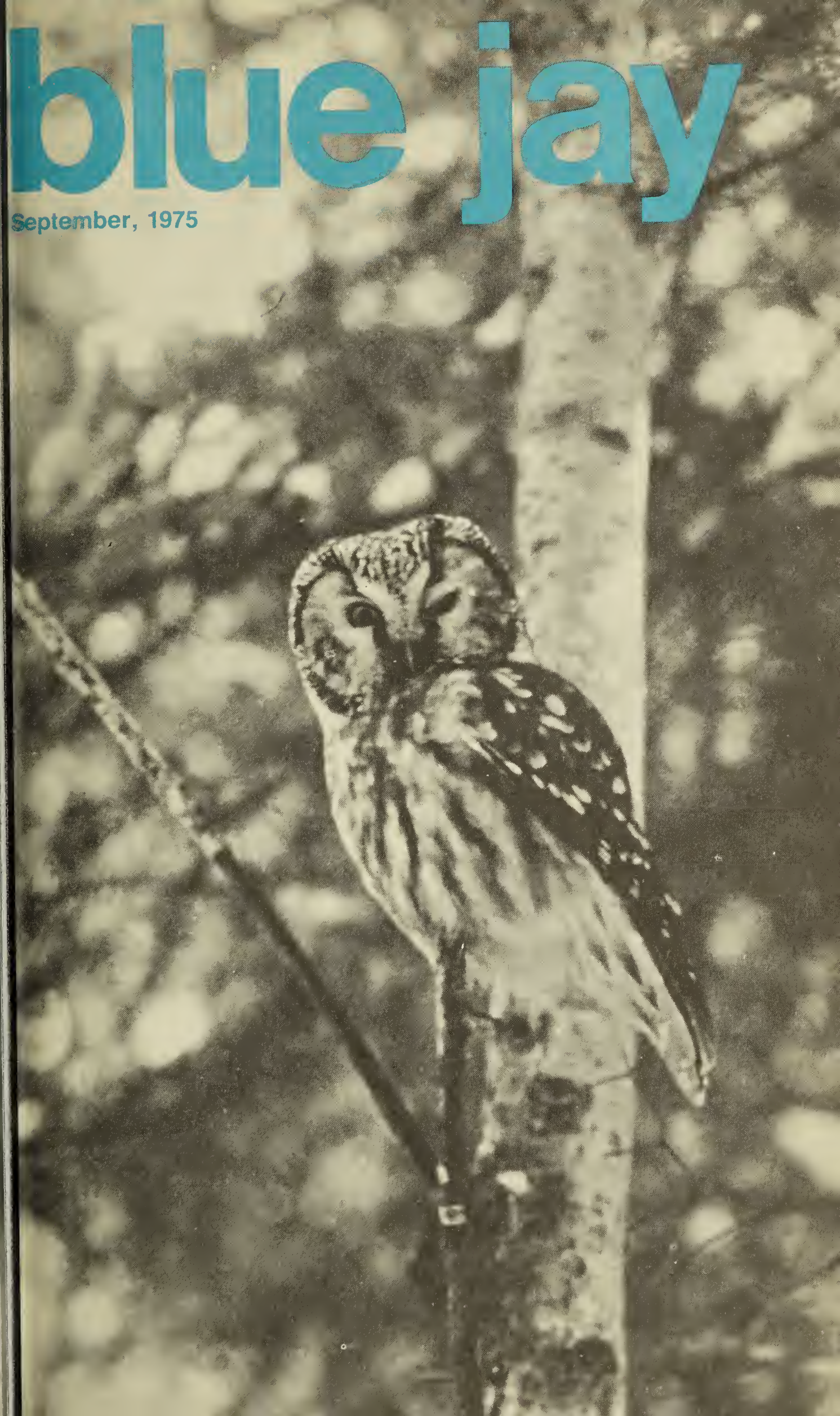
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# blue jay

September, 1975





# Blue Jay

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Editor: Bernard Gollop

Assistant Editors: Robert W. Nero, Ed Driver,  
Vern Harms

Circulation: Lorne Scott

Editorial Assistants: Molly Denson, Thelma Pepper

All items for publication should be addressed to  
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David Pristupa, whose excellent photographs illustrated "Fire in the Sky" in the June issue is a Saskatoon high school student.

C. J. Trefry who did the hawk drawings that appeared in the last issue and the wren in this issue is from British Columbia.

The photographs of a willow beetle in this issue were by Ralph Underwood, Canadian Agriculture Research Station, Saskatoon.



Reflections

B. Goll



# ECOLOGICAL ROAD PLANNING IN NORTHERN SASKATCHEWAN

## A Study of Alternative Routes for the Proposed Road from Besnard Lake to Sandfly Lake, Sask.

by JONATHAN M. GERRARD and P. NAOMI GERRARD\*

*In this report we use data on Bald Eagle nesting and feeding habitat presented in other article in this issue to suggest how roads in northern Saskatchewan might be planned to minimize effects on Bald Eagles. The study reported here has already been submitted to the Honourable Ted Bowerman, Minister of the Department of Northern Saskatchewan, and the final decision on the route of this road currently hangs in the balance. We present this study here to show how our earlier research can be used to planning and development in northern Saskatchewan, and to generate support from the members of the Saskatchewan Natural History Society for a change in the proposed location of this road and a change in the present policy of planning roads in northern Saskatchewan.*

Research during the last 8 years has shown that Saskatchewan has a large breeding population of Bald Eagles.<sup>4 7</sup> With the decline in numbers of this species in many parts of North America,<sup>2 5 14 15 16</sup> northern Saskatchewan with a mid-summer population of about 12,000 Bald Eagles is now one of the major remaining breeding reservoirs, and is a major source for eagles wintering in the midwestern United States.<sup>9</sup> The continued existence of large numbers of these big beautiful birds in northern Saskatchewan depends on preservation of their nesting habitat and the continued availability of fish for them to eat.

Currently, the economy of northern Saskatchewan is in transition from one of hunting, fishing and trapping to a more diversified one in which pulp-milling, mining and recreation are

playing important roles. New roads are now providing easy access to areas which heretofore had been accessible only to travellers by canoe or bush plane. These roads are the arteries along which future development will take place. Presently, many of these roads are designed and built by the Prince Albert Pulp Company to reach areas of harvestable stands of timber. The routes for these roads are usually the shortest alternative between two points with a view to minimizing trucking costs which are estimated at a fixed rate per mile. In view of the many other features of northern Saskatchewan which are worthy of consideration, in particular Bald Eagles, we reviewed the location of a segment of a proposed road running north from Besnard Lake towards Sandfly Lake (Fig. 1). Emphasis was placed on habitat requirements for Bald Eagles. In addition, ecological features which will be important to the future fishing, hunting and

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\* - 15th Ave. S.E.,  
Minneapolis, Minn. 55414



recreational potential of northern Saskatchewan were considered. To obtain a balanced view of the alternative routes for the road, landscape features which play a role in the cost of construction and maintenance of a highway were also identified along with forests suitable for pulp harvest.

**METHODS.** The method employed in planning the optimum route was that of McHarg.<sup>12</sup> Briefly, each of the factors to be considered was graded on a scale of one to three. A map was then drawn with optimum areas for the road (grade 1) left transparent, suboptimum but acceptable areas for the road (grade 2) coloured grey, and poor areas for the road (grade 3) coloured black. Each factor (soil, slope, etc.) was analyzed separately, and the maps for each factor were then superimposed so that the optimum position for the road could be visualized as the place where the lightest coloured areas were located.

**RESULTS.** *Optimum terrain for road construction:* Two factors relating to optimum terrain for road construction are soil conditions and the slope of the land.

The optimum soil conditions for road construction in this area are sandy and gravelly soils (Fig. 2), because gravel is required for a road bed and it is easier and less costly to build a road on a sand or gravel base than on a rock base. Specific information on soil types in this area is lacking, but it is known that Jack Pines tend to grow in areas with sandy and gravelly soils. Thus areas where there were Jack Pines were considered to have optimum soil conditions (grade 1). Marshes and lakes were considered poor conditions for roads (grade 3). All other areas were considered grade 2. Information of the location of Jack Pine stands and the areas where there were lakes and marshes was obtained

from inventory maintenance map (Dept. of Natural Resources, Sask.). An example of current soil erosion may be seen in Fig. 7.

Steep slopes (greater than 10%) were considered poor places for road construction (grade 3).<sup>12</sup> More gentle slopes (2.5-10%) were considered intermediate (grade 2). Flat land (slopes less than 2.5%) were considered optimum for road construction and graded 1. Information on slopes was obtained from a 1:50,000 map (Surveys and Mapping Branch, Dept. of Energy, Mines and Resources, Ottawa, 1973) with contour intervals of 25 feet (Fig. 3).

*Optimum Route for Harvesting Forest for Pulp:* Mature forests where trees were greater than 50 feet in height were considered optimum for harvesting for pulp (grade 1). Areas where trees were 30 to 50 feet in height were classified as intermediate (grade 2) and areas where trees were less than 30 feet in height were considered grade 3 (Fig. 4). The presence of softwood and hardwood in the stands was not taken into consideration because determination of the optimum soil conditions had already created a bias towards softwoods, and future harvesting for pulp will include hardwoods as well as softwoods. Tree density was not taken into account, except that sparsely treed areas such as road ridges were classified grade 3, because this complicated the analysis without altering the map significantly.

*Optimum route to Minimize Effects on Wildlife:* In the preparation of this map (Fig. 5) the following areas were considered: 1) the marshes with trees near forest edge and associated streams and ravines which are the most productive habitat for wildlife — turkeys, ducks, moose and fur bearing animals — important to local trappers and hunters; 2) spawning grounds for fish and 3) nesting and feeding areas



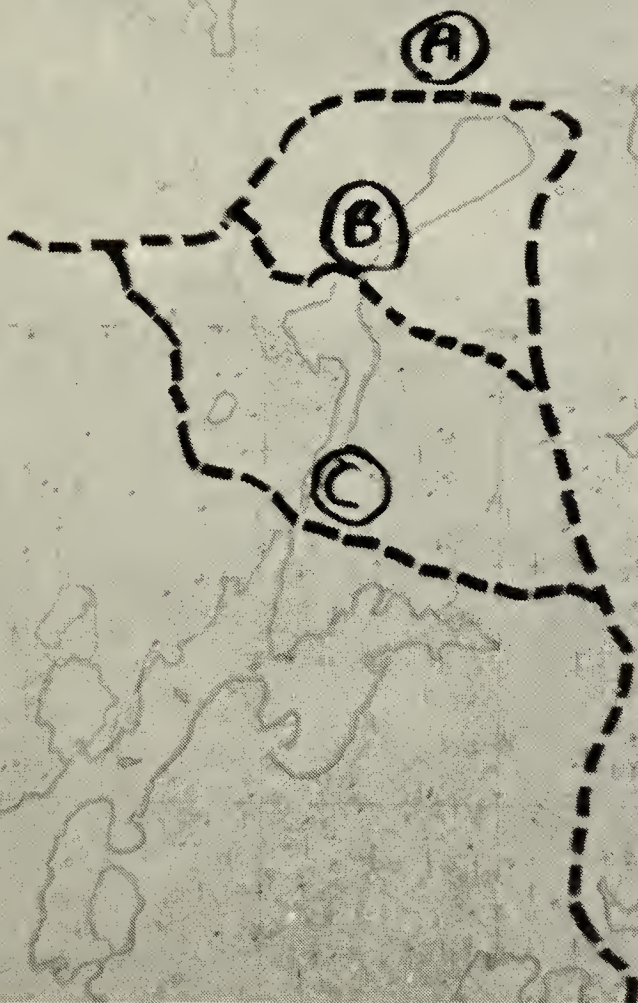


Fig. 1. The area covered by the present study. Route C is the proposed road location. Routes A and B are alternatives. The lake on the right hand side and on the lower left is Besnard Lake. The spawning stream considered by this study is located just below the letter C.



Bald Eagles. The marshes are classed as poor locations for roads in Fig. 2, and were not again marked on the map shown in Fig. 5. John Hastings, manager of Red's Camp and a long time resident of Besnard Lake, was asked to mark important spawning streams flowing into the lake. The only spawning area in the region considered by the present study is at the entry of a small stream into Besnard Lake (Figs. 1 and 8). Walleye and Northern Pike can be seen spawning in large numbers each spring near this stream and in the adjacent bay. The importance of Besnard Lake for fishing (both commercial and sport) and the importance of this spawning area as a source of food for Bald Eagles on their arrival at Besnard Lake in the early spring, led us to suggest a buffer zone (a circle 1/2 mile in diameter) as a poor place to put a road (grade 3) and an additional zone, 1/2 mile in width, which would be intermediate in terms of the route (grade 2). Eagle nests were given a buffer zone (1/4 miles in diameter — grade 3) where definite adverse effects of a road would be expected and an additional zone 1/4 mile wide was considered grade 2 where less severe adverse effects might occur. These figures are taken from a study by Greg Jeunemann done in northern Minnesota on the Chippewa National Forest.<sup>11</sup> They represent the best available figures on the effects of human disturbance on Bald Eagles. We suggest that, if anything, these zones may be too small for northern Saskatchewan, though more research will be needed to substantiate this belief. We have already shown that the most critical time for disturbance near eagle nests in Saskatchewan is from March 20 to July 1 during courtship, incubation and when the young are small, and it may be that a larger buffer zone for this time interval alone will suffice.<sup>6</sup>

Since about 12% of Bald Eagles in

northern Saskatchewan change nest sites each year, we also considered habitat suitable for Bald Eagle nesting but which currently has no nest site. Using quantitative data on the utilization of shoreline habitat in the area by Bald Eagles,<sup>8</sup> we coloured black all zones where these birds could be expected to have one or more nests per 1/4 sq mi, and we coloured grey all habitat where Bald Eagles could be expected to have one or more nests per sq mi.

*A Composite Map:* A consideration of possible routes for the road going north from Besnard Lake toward Sandfly Lake yields three alternatives for the segment studied in this report (Fig. 1). Superimposition of the maps shown in Figs. 2-5 gives a combined map in which areas are graded one to five in degrees of darkness (Fig. 6). On the composite map the areas most suited for the road are lightest, and the areas least suited are the darkest. The route which is most consistently light is route A from Fig. 1, and this is labelled first choice (1) on Fig. 6. The route which appears to offer the second best alternative is route B, and this is labelled second choice (2) on Fig. 6. Route B needs to be seriously considered since it is somewhat shorter than route A. However, there is a steep slope along route B which would also make construction more difficult.

From the composite map it can be seen that route C is the poorest choice of all. This route would necessitate putting the road through three areas of steep slope. It might be possible to avoid one or two of these areas of steep slope but at a cost of putting the road through marshes. Furthermore the route goes through a small stream where fish spawn in the spring, an area that is an important spring feeding ground for Bald Eagles. In view of the importance of this area to eagles, and to future fishing, hunting and trapping,



we feel that the road should not go near this small stream if there is any other possible location. The present study shows that routes A and B are both possible alternatives, and that they are both feasible and indeed superior to route C when looked at from several aspects. In view of these findings, we strongly urge that the present plans which would put the road through on route C be altered and instead either route A or route B be chosen.

**DISCUSSION.** The present investigation has studied a segment of a proposed road from Besnard Lake to Sandfly Lake placing particular emphasis on the habitat requirements of Bald eagles. The dependence of these eagles on shoreline habitat which is the same habitat most frequently chosen by people for cottages makes these birds uniquely susceptible to the influence of human development. A review of the decrease in numbers of Bald Eagles in other parts of North America suggests that human disturbance and habitat destruction are major factors.<sup>1 3 5 14 16</sup> On Manhattan Island in New York in the 1800's, George Grinnel recalled that the Bald eagle was "extremely abundant on the floating ice of the river and sometimes brought its captive fish to the trees in the park, there to eat them or as often to quarrel about them with its fellow, and sometimes drop the prey."<sup>10</sup> Alas, this sight is now only a memory. Roberts in *The Birds of Minnesota* mentions that there used to be one or more pairs nesting on nearly every large lake in the state.<sup>13</sup> Presently Bald eagles breed commonly in only a few parts of northern Minnesota. Today in Saskatchewan there are one or more pairs of eagles nesting on nearly every reasonably sized lake in northern Saskatchewan from the Cumberland Marshes in the southeast to Lake Athabasca in the northwest. Larger

lakes like Besnard Lake have many more. Concern for the future of these eagles prompted the present study.

In this report, we emphasize the fact that, in the rush to build roads for harvesting pulp, important aspects of the northern environment are not receiving adequate attention. We prepared this study not just to look at alternatives to a short segment of proposed road, but also to serve as an example of how various factors in the northern Saskatchewan environment, particularly eagles, can and should be considered in the building of roads. We recognize that there are defects in the present study. Due to lack of information, the depth of bedrock, an important consideration for northern road building, was not taken into account. Jack Pines can grow on well drained areas where there is exposed bedrock as well as on sandy and gravelly soils. In such areas, Jack Pines are usually sparse and short. We feel that through consideration of tree height and classification of sparsely treed areas as grade 3 in Fig. 3, most such areas have been included in the darker areas on the composite map.

In spite of these defects, we feel this study has served a useful purpose in integrating several environmental factors and future human activities into plans for road building in the north. It was instructive to us to realize that the optimum place for road construction and harvesting pulp — well drained areas with climax forest — are usually poor places for wildlife, while the most productive areas for wildlife — marshes with the nearby forest edge and the associated streams and ravines — are usually poor places for road building and pulp cutting. With careful planning it should, therefore, be possible to have considerable pulp cutting in the north and still minimize the adverse effects on wildlife. Without such planning, it is likely that many important aspects of our nor-



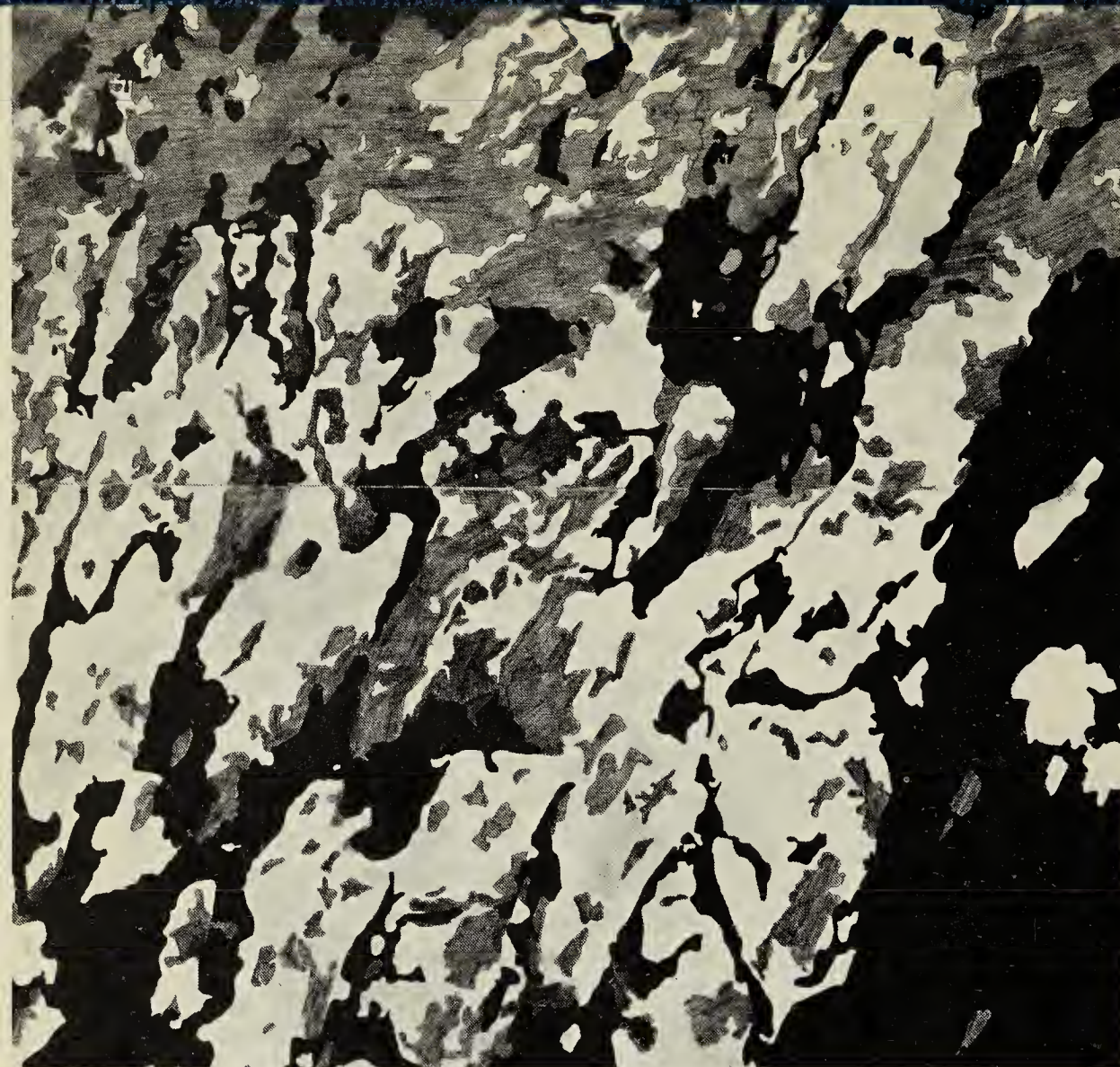


Fig. 2.  
Analysis  
of soil  
conditions.  
Optimal  
conditions  
for the  
road are  
white,  
suboptimal  
conditions  
for the  
road are  
grey and  
poor  
conditions  
for the  
road are  
black.

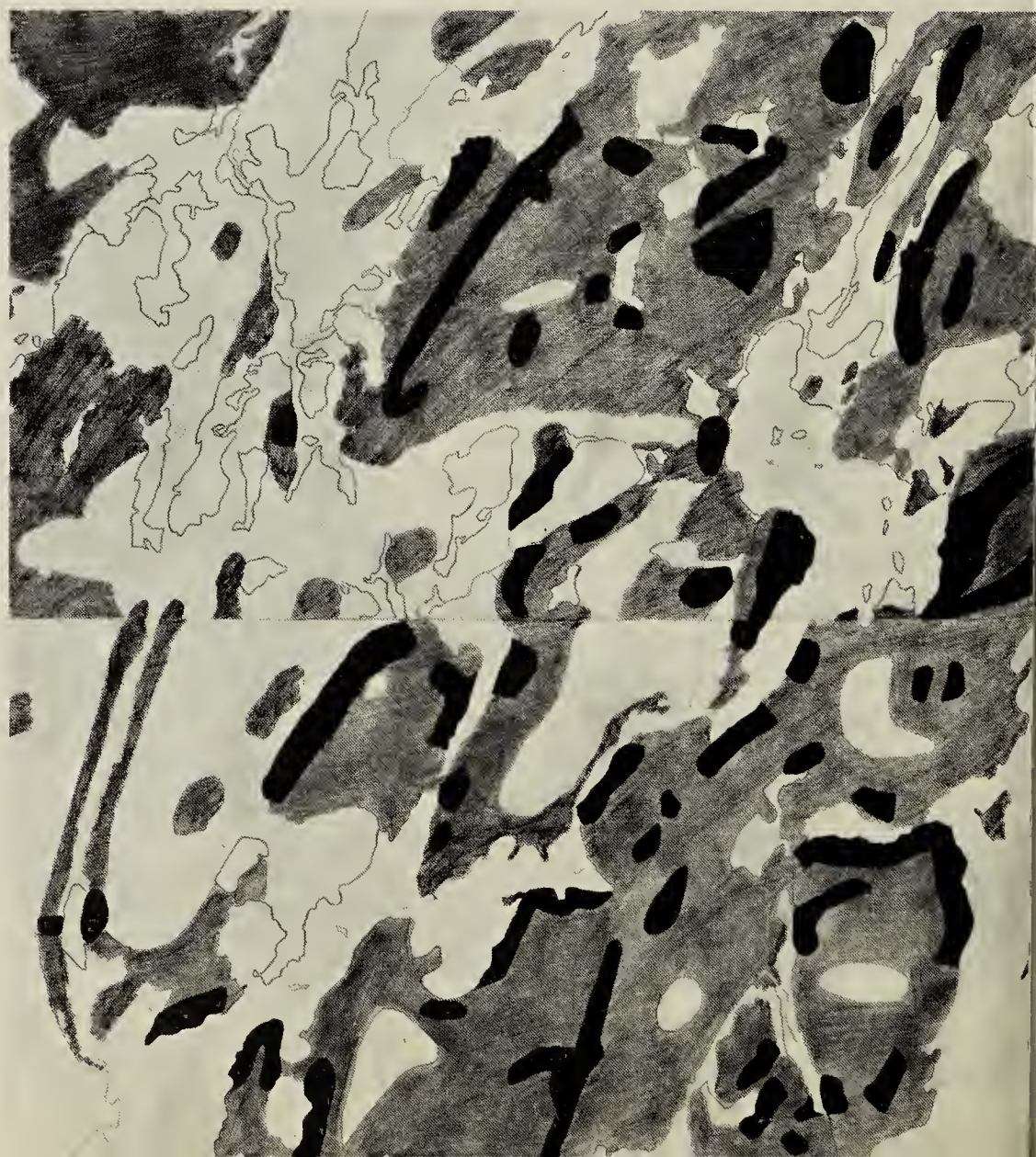


Fig. 3.  
Slope of  
the land.  
Areas of  
steep slope  
are black,  
moderate  
slope grey  
and flat  
land is  
white.





Fig. 4. Suitability of forests for harvest for pulp. Optimum forests for pulp are white, suboptimum grey, and poor forests are black.

Fig. 5. Areas important to wildlife. Black areas represent eagle nest sites, fish spawning areas or optimum eagle nesting habitat. Grey areas are buffer zones for the above, or suboptimal eagle nesting habitat. White areas are poor Bald Eagle nesting habitat.

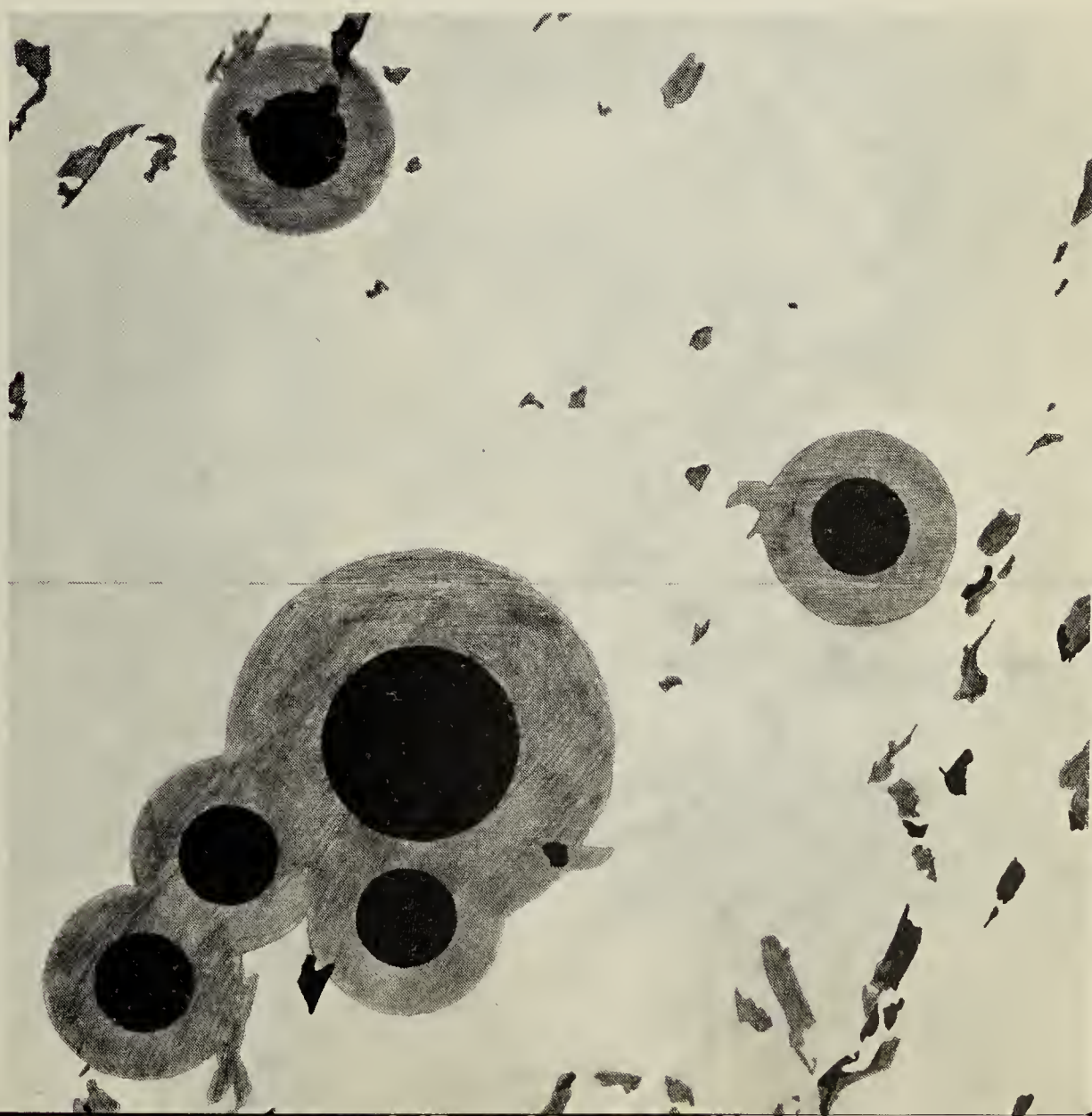




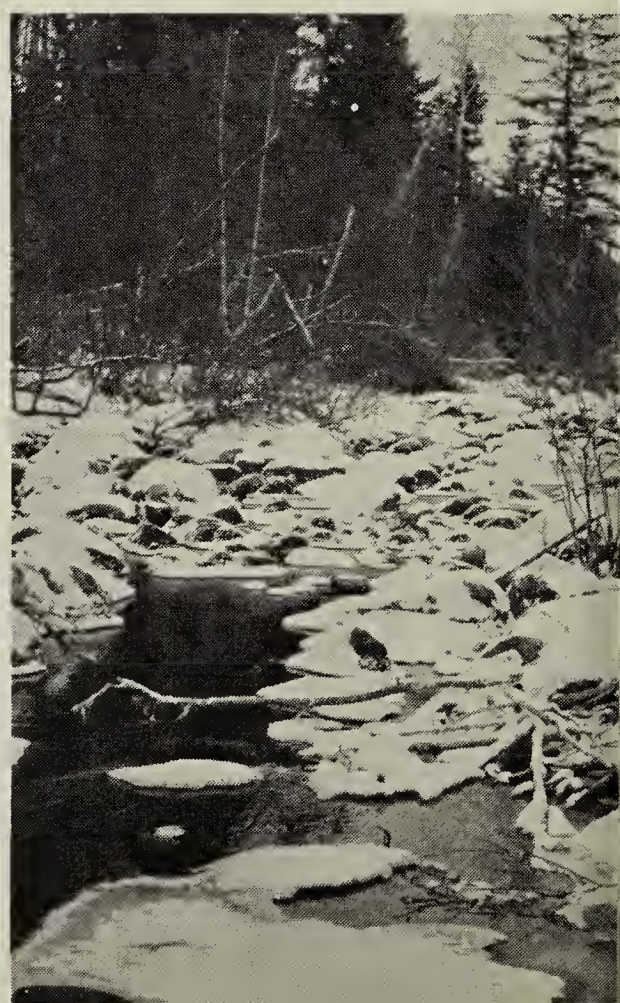


Fig. 6. The Composit map: The alternative labelled (1) is the best over route. Alternati (2) is the second be

Fig. 7. Erosion along the present road to Besnard Lake is particularly severe where the road crosses the Montreal River. As a result of this erosion the Montreal River in spring changes from a clear stream above the road to a brown turbid stream below it. Such increased turbidity in a spawning area during the critical time of spring runoff may have a drastic effect on spawning fish.



Fig. 8. The small stream referred to in the present study where fish spawn early in spring. This photograph was taken in early April, 1975, 5 to 7 weeks before the ice is usually gone from the main body of the lake. Already the flow in this stream has resulted in some open water.





ern Saskatchewan heritage will be lost.

**SUMMARY.** Studies were conducted on alternate routes for a segment of the road planned from Besnard Lake to Sandfly Lake. These studies take into account 1) the most suitable terrain for a road, 2) the location of forests with trees which are suitable for harvest for pulp and 3) the location of important areas for wildlife. The study suggests two alternative routes for the road, either of which would be more suitable than the presently proposed route and serves as an example of how planning for roads and other development in northern Saskatchewan might take into account the habitat requirements of Bald Eagles and other wildlife.

**ACKNOWLEDGEMENTS:** The helpful comments and suggestions of W. J. Maher, D. W. A. Whitfield, J. F. Daly, Morrison, G. Roberts and A. Piper are appreciated.

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<sup>12</sup>McHARG, I. L. 1969. *Design with nature*. Doubleday and Co. Inc., Garden City, New York.

<sup>13</sup>ROBERTS, T. S. 1932. *The birds of Minnesota*. The University of Minnesota Press, Minneapolis.

<sup>14</sup>SPRUNT, A. IV, 1969. *Population trends of the Bald Eagle in North America*. In Peregrine Falcon Populations. Ed. J. J. Hickey. Univ. Wisconsin Press, Madison.

<sup>15</sup>SPRUNT, A. IV., W. B. ROBERTSON Jr., S. POSTUPALSKY, R. J. HENSEL, C. E. KNODER and F. J. LIGAS. 1973. *Comparative Productivity of six Bald Eagle populations*. Trans. N.A. Wildl. Nat. Res. Conf. 38:96.

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\* \* \* \* \*

The largest number of Bald Eagles recorded in the 1974 Christmas Bird Census for North America was at Klukwan, Alaska (59° x 135°). In the standard 6-sq-mi count area, 1162 eagles were found.



# PEOPLE OR HORNNED OWLS?

A talk to the Prairie Habitat Conference,  
Saskatoon, April 16, 1975  
by J. STAN ROWE\*

My text is taken from the Board of Inquiry transcript for the proposed strip mining and thermal-electric development, Poplar River Power Project (Vol. 3, p. 50):

Chairman: What expectations of improved quality of life (do you) see in this whole project?

Mr. S.: You mean people or horned owls?

Chairman: I have some greater interest in people than horned owls; I'm not at all interested in the horned owl.

Here, honestly expressed, is a viewpoint from which spring the major problems that bedevil the human race. Posed as a question, expecting a resounding negative response, it asks: "Can anything be as important as us?" It implies that human society exists apart from the world of nature and that "quality of life" pertains entirely to cultural things; to pay cheques and artifacts.

What sane person would be interested in saving horned owls if horned owl living-space can be made to yield consumables and jobs? After all, which is more important, people or horned owls, cereal crops or ducks, herefords or deer, forest products or caribou?

Humanity in general has not yet grasped the truth that we are earthlings, born out of and sustained daily by its water, air, soil, organisms. Missing still is a lively awareness of the biosphere, with its myriad and beautiful natural forms and sculptures, is man's habitat, essential to in many respects, important in most

As an aside but pertinent to the point, the word "habitat" applied to humans is commonly taken to mean "habitation" — house, community. The definition slights the world of nature, the ground of man's continued existence. So, next year's world conference in Vancouver, "Habitat '76" will focus on urban living, and doubtless many optimistic proposals will be made to assure the future of humanity by redesigning our cities!

Hard-headed, "realistic" people do not accept one reason for preserving animals. If it can be shown that the hunting makes good sport, especially if the sport is marketable, then the merits of preservation can at least be argued. There is, of course, a long tradition of interest in animals large enough to be seen down the barrel of a gun (or, the water, large enough to take a lure). The tradition reaches its finest flowering in game farms and stocked streams, where animals are raised for ritual killing. Even though the trend today is toward "non-consumptive" uses, toward observing and photographing wildlife, the focus is still on us and our interests. The

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\*Dept. of Plant Ecology,  
University of Saskatchewan,  
Saskatoon, Sask.



people first" proposition that guides our every action is wrong and dangerous.

If changes in attitude are to be made, it is necessary to understand the historical-cultural reasons for the contemporary disinterest, disdain and even fear of the natural world. Such attitudes are learned not inborn. Apparently the Greeks believed that the world around them was organic, important, sacred, and they peopled it with various deities. Pan, the all-god, father of the nymphs, dryads and naiads who inhabited groves and streams, symbolized with his wreath of leaves and his pipes the magic and revelry of life in nature. But somewhere in our later tradition the sense of mystery and sanctity was lost. As D. H. Lawrence pointed out, Pan with goat's beard and cloven hoof was transformed into the devil. Nature was "demythologized" and the door was opened to the so-called objective viewpoint that separates the observer from the world. Thus western scientific man can exterminate rare life forms, or carve up the biosphere, with colossal unconcern and no apparent qualms. In a relatively few generations we have lost our roots with the world that brought us forth in four billion years of evolution.

Perhaps the pendulum is swinging back. Certainly the "let it be" philosophy is gaining ground. A mere years ago the Saskatchewan public caught the idea that the only way to preserve wild animals (except in zoos) is through preservation of their habitat. The Saskatchewan Wildlife Federation has been increasingly effective in promoting this simple basic ecological concept. It may be a short step to the realization that, along with the other coinhabitants, the species *Homo sapiens* also needs his native habitat preserved. But first a commit-

ment of people with insight and belief is needed. Such commitment can only come from those with a love of nature.

You may remember that Aldo Leopold tussled with the problem in several articles called *The Land Ethic* and *The Conservation Ethic*. He attempted to provide, by analogy, a reason for care of the land. Ethics, he implies, are adaptive responses of the human race; they have social and survival values. What is accepted as "good" turns out to be the system of beliefs and behaviours that, through long experience, the race has found necessary for its continuation. First came the ethics of *individual* relationships (e.g., Thou shalt love thy neighbour as thyself), then the ethics of *societal* relationships (Thou shalt look after the greatest good of the greatest number), and now the first glimmers of the ethics of *ecological* relationships (Thou shalt protect and preserve the health, permanency and productivity of the earth). While Leopold thought of this last essential ethical step as just evolving, I am inclined to believe that it is already present instinctively in each of us, waiting beneath the surface to be released from the wrong habits and activities imposed by a misguided society.

The beauty of ethics, once the intuitive insight is given, is that it lifts questions of behaviour out of the arena of individual and social gain. An ethical person acts from conviction that what she is doing is right, regardless of whether or not it is profitable. A child who cares for his parents is acknowledging, consciously or not, a dependence on them that cannot be priced. Children of the earth should do as much. Everyone who controls a part of the earth — whether a city plot or a farm — should know the ethical responsibility of protecting and preserving, without being paid.



When judgements of what actions should be taken are made solely on an *economic* basis, environment always loses. The reason is that economics is necessarily man-centered, not biosphere-centered. Even the *ethical* actions that center on individuals and society — what we call “altruism” and “humanitarianism” — are to be viewed with distrust because, unrestrained by earth-care, they have ceased to be adaptive. Strange as it may seem, our conventional man-centered ethics are killing us. To the question “Shall we ruin the earth to feed starving humanity?”, the unconventional ecological highest ethic must say “No!”

It follows that there are various frames of reference to which the subject of “habitat” can be related. The narrowest possible view simply looks for space to raise selected animals for human use. Perhaps its ultimate outcome is the licensed angling for carp in artificial ponds on strip-mined lands, bird-watching in the city cemetery, or shooting ducks in a barrel. The broadest possible view looks to preservation of representative parts of the biosphere, with their full complements of land and water forms, plants and animals; *the preservation of large complete ecosystems that renew the earth simply by being there and producing clean water, fresh air, and life*. This is people habitat as well as animal habitat and, in the long run, I don’t see how we can settle for less. Between the two extremes lies a broad spectrum of “habitats”, for single or multiple human uses, for simple or complex preservation, for narrow goals or broad.

Most wildlife specialists are involved in management. Their employers would probably be unhappy if my thesis were widely championed, viz., that habitat in the broadest sense — equivalent to natural area, ecological reserves and wilderness — should be the center of wildlife interest. We must be realistic and concede that in this unenlightened age society is demanding a good deal less. Yet it is important that practitioners and professionals should also be leaders and set high goals. The public has a way of catching up quickly when the time and the ideas are right.

The title phrase “People or Horned Owls?”, and all other oppositions of the same genre, are really not questions and non-alternatives. We *must* protect and conserve the natural world, horned owls and all, because that is the *right* thing to do, because the earth *is* sacred, and because any other course denies our biological and ecological roots. And, as a fortunate spin-off, because this is the only road to survival. Given acceptance of such stirring and worthwhile goal, the short-term day-to-day man-centered aims of habitat management can perhaps be seen in their correct perspective, contributing to but far short of the ideal and the necessary. Wildlife managers need to recognize a hierarchy of habitat goals, giving leadership and support to the primary one even while their bread-and-butter jobs require that they attend also to those that are secondary.





# A GRASSLANDS PARK — YES OR NO?

by MAUREEN REVER\*

On March 27, 1975, Saskatchewan's Minister of Tourism and Renewable Resources announced the signing of a memorandum of agreement" between the federal and provincial governments to determine within the next 2 years the suitability of establishing a national grasslands park in the Val Marie area of southern Saskatchewan. Prior to a decision being taken, public hearings were promised.

In the light of the record of both provincial and federal governments in regard to public hearings on environmental issues, some citizens' groups and individuals with a long standing interest in seeing a grasslands park in Saskatchewan, are now concerned about how the decision — yes or no — will be reached. Will the large number of letters and expressions of support for a national grasslands park already in the Premier's office — letters not only from Saskatchewan citizens but also from other parts of North America — be considered? Or are we starting from scratch?

The record is not good.

The Saskatchewan government made its debut with the public hearings on a proposed plan for Meadow Lake Provincial Park. Although many excellent briefs and comments were presented by

professional groups, highly skilled and knowledgeable members of the public and individual citizens with property and experience of the park area, today, almost 2-1/2 years later, there has been no indication as to the conclusions reached. Furthermore, at the time of the hearings it became evident that part of the proposed plan, on which the public was being asked to comment, was already in operation. Who is fooling whom?

Then came the public hearings on the Poplar River thermo-electric plant. A quick answer — yes — a foregone conclusion. It was clear to the environmentally concerned that these public hearings were nothing but "window dressing". That the hearings were held only at Coronach made it extremely difficult for persons outside the area to attend. Briefs sent by mail may or may not have been given attention — who knows? The information given to the public less than a month before the hearings was, for the engineering aspects of the project, highly technical, and for environmental issues, totally inadequate. The panel of adjudicators had no one competent to judge the environmental impact of the project.

While the federal government has done better in making information available in advance of public hearings, thus making the preparation of briefs more meaningful, still the public has reason to question whether these hearings, too, are just "window dressing". For example, it appears that Village Lake Louise will be built in

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For the Resources Study Group, Box 276, Sub Post Office No. 6, Saskatoon, Sask. A study of the Grasslands Park is available from the author. From *Probe*, June 1975.



spite of overwhelming public disapproval of the project. Although somewhat modified from the first proposal, the federal park's design has flaws equal to, or even more horrendous than, the original Esso-proposed development.

And so we take a dim view of the announced "memorandum of agreement" to determine the suitability of establishing a national grasslands park. How can we be sure the information provided to the public prior to the hearings is unbiased? Will the pros and cons of the project be clearly stated? We should know the views of the ranchers in the area and the reasons for them; we should know whether or not there are valuable resource deposits in the area; we should be aware of the unique and fragile ecology of the area. So far, little of this information has been made available to the public. So far the public has had to make educated

guesses as to what the situation really is.

In my opinion, before the citizens of Canada can make a wise decision on having a national grasslands park — a park that would be unique in North America — it would be necessary for the governments concerned to make a sincere effort to release extensive, factual information to the public well in advance of the hearings. All interested groups should have opportunity to contribute to this. The hearings, then, should be held well after the summer months and in places accessible to people from other areas of the province to ensure a maximum representation and high quality contributions.

To gain the confidence of the public it is necessary that those appointed to evaluate the hearings are capable of judging the evidence and opinions of different interest groups and in



Kildeer Area

Frank Bellan



dividuals. Why, for instance, was there no representative of Saskatchewan's Environmental Advisory Council at the Poplar River hearings? The Council was not even consulted as to whether those appointed to the panel were qualified to make environmental judgements. Is this, the public's "Advisory Council", more official "window dressing"?

I do not know how much longer citizens' groups and individuals are going to spend the time and effort required to prepare detailed, reasoned

recommendations for any level of government unless there is a clear indication that their opinions will be given an honest evaluation. I do know that the national grasslands park is worthy of every effort by those of us who value this unique ecological treasure and strongly feel that the issue must be given serious consideration by the public.



Silhouette of Short-eared Owl on Fence Post

Chris Rees





Pronghorns

Lorne Sco

## PARKS CANADA COMMENTS

The following is the text of a letter dated July 10, 1975, from G. M. Davison of Parks Canada, 114 Garry St., Winnipeg, to Maureen Rever:

I read your paper on "A Grasslands Park — Yes or No" with a great deal of interest. The concerns expressed by you are relevant and are concerns of a large number of Canadians. We are also concerned with these matters and we hope that the following approach will give many people the opportunity of making their views known to us and to the Saskatchewan Government.

Parks Canada and the Saskatchewan Government are now in the process of drafting an information booklet for the Grasslands hearings, which will be sent out to interested groups and to people in the immediate area of the proposed Park. This booklet will be distributed around mid-August, thus giving the general public a chance to evaluate the contents prior to any public meetings.

On or about September 15th, the Saskatchewan Government and Parks Canada will commence holding a series of information-type meetings at various locations in the Province of Saskatchewan. These meetings are to

be held with the intent to clarify any misunderstandings that may develop as people evaluate the contents of the booklet.

The information-type meetings will be followed by public hearings which will commence in late fall. Again these meetings will be held in various locations in the Province of Saskatchewan, thus giving all interested groups and individuals an opportunity to make their views known.

Your comments on biased information were well taken and to avoid this pitfall we will be trying to present all information as straightforward as possible. In addition to this, an independent chairman will be appointed for the public hearings, thereby reducing the chance of biased opinion from influencing any final decisions.

The commission of enquiry will be submitting their report to the two ministers sometime in December or early January which will outline the degree of support for the proposed Park. Afterwards the Saskatchewan Government will be in a position to make a decision on the proposal. Yours sincerely, G. M. Davison, Director.



# GLASSWORT

## — A SALT-LOVING PLANT

by R. E. REDMANN\*

While driving through the prairies most people at one time or another have noticed a reddish tint to the shorelines of many of our saline sloughs. Those curious enough to examine more closely probably have found a strange little succulent and leafless plant, glasswort (*Salicornia rubra*). The species name, *rubra*, is Latin for red, and during the latter portion of the growing season the name is very appropriate. The common name, glasswort, is also apt, since the succulent stems have a glassy appearance and tend to crunch under the feet as if one were walking on delicate crystal.

Our species is a relative of a number of species of *Salicornia* found along the seacoasts of North America. An especially close relative is samphire (*Salicornia europaea*) which can be found in the salt marshes of both the east and west coasts of North America.

The culinary value of the samphire was recognized by the early settlers who recalled using the European samphire as a salad, pickle or pot-herb. Euell Gibbons discusses the use of samphire for food and includes his personal recipe for samphire pickles! I have substituted glasswort in the recipes and found the results quite palatable.

Glasswort adds a salty tang to a

tossed salad, and the glasswort pickles are a unique treat. I have not bothered cooking it up as a pot herb — it is a member of the spinach family (*Chenopodiaceae*) and I have never overcome my childhood dislike of that vegetable. Whether the flavour is similar or not I cannot say.

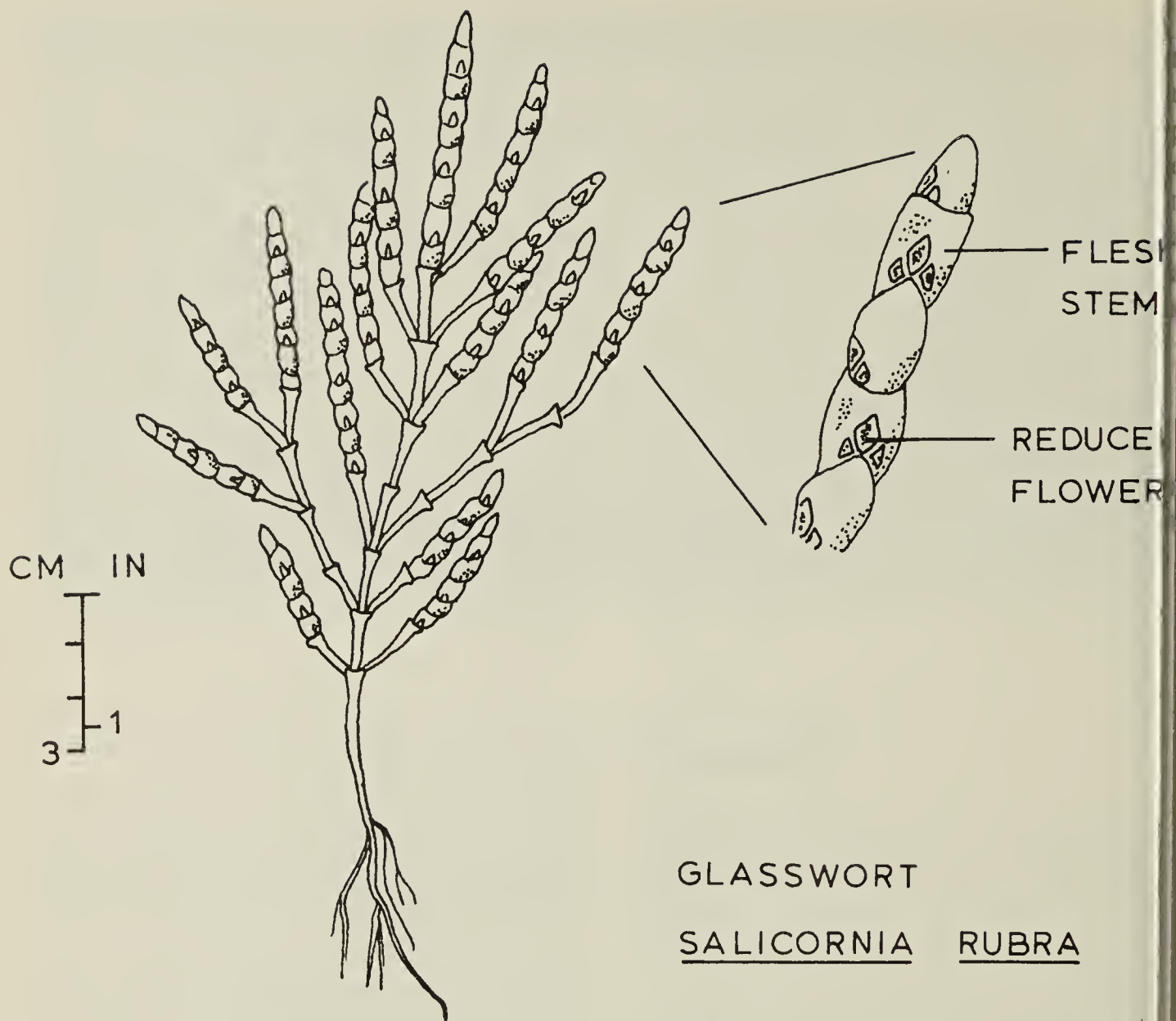
The salty taste of glasswort is a simple clue to the intriguing physiology and ecology of this species. It is one of the most salt tolerant plants to be found in the whole world. In the saline sloughs and lakes of the prairies it is found closest to the center of dry saline depressions where no other vascular plant can grow. Salt concentrations as high as 5 percent have been measured in soils where glasswort grows; one can frequently observe salt crystals around the base of the plant and a white salt crust on the soil surface between the scattered plants. (The most important salt is sodium chloride, common table salt.) As the salinity decreases away from the center of the saline area, distinct bands of vegetation dominated by other salt-tolerant species can be observed: sea blite, *Suaeda depressa*; salt-grasses, *Puccinellia nutalliana* and *Distichlis stricta*, and a few others.

The question of just how plants such as *Salicornia rubra* are able to tolerate extremely high levels of salts has been studied by botanists for many years. The approach of the plant is basically to fight fire with fire, or more precisely, to fight salt with salt. The

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Department of Plant Ecology,  
University of Saskatchewan, Saskatoon.





salty tang of the plant indicates that glasswort accumulates salt in its tissue. It does this in order to maintain a proper gradient for water uptake. Salts dissolved in water decrease the ability of water to diffuse. An ordinary plant growing in saline soils could actually lose water to the soil because the activity of the water in the plant (i.e., its ability to diffuse) is greater than that in the soil. The plant wilts and then dies of drought. Glasswort gets around this problem by accumulating salts until the balance is such that water must diffuse into the plant. Salt contents as

high as 30 percent have been found in the tissue of plants like glasswort. This is not the complete solution to the problem, however. Too much salt disrupts the functioning of ordinary plant cells by disturbing enzymes (the compounds basic to the chemistry of life). Glasswort has evolved enzymic systems that are tolerant of salts, and also has the means of localizing salt by accumulating them in out-of-the-way corners of the cells and tissues. The stored salt may eventually be eliminated by simply shedding shoot segments where it has accumulated.



These are the basic problems of salt tolerance in plants. Of course the actual mechanisms are much more complex than I have indicated — plant ecologists and physiologists are still trying to understand them fully. Think about the problems of salt tolerance again when you eat your glasswort salad or munch your samphire pickles.

#### **Recipe for Samphire (Glasswort) Pickles<sup>1</sup>**

Wash freshly picked glasswort. Pack in pint jars with stems straight and vertical.

Make a pickle of: 1 qt. vinegar, 1/2 cup sugar, 3 tablespoons mixed pickling spices, 1 slice onion and 6 bayberry leaves.

Boil together for 10 min. Pour boiling hot over glasswort until jars are full. Seal and store 3 weeks before broaching.

<sup>1</sup>Euell Gibbons, *Stalking the Blue-Eyed Scallop*, David McKay Co., Publ., N.Y. 1964.



## TADPOLE SHRIMPS IN BEAVER CREEK, SASKATCHEWAN

by JOHN R. LAWRENCE\*

Tadpole shrimps (Class Crustacea, Division Eubranchipoda, Order Notostraca) are characteristic inhabitants of temporary ponds and pools. They are not considered to occur in large water bodies and flowing systems. Two specimens of *Lepidurus ouesi* (Packard), were found in a flowing stream, Beaver Creek, Saskatchewan, about 10 miles south of Saskatoon, on June 28, 1974. (Figs. 1 and 2) This observation is noted and the life history of the Eubranchipods — tadpole shrimps, fairy or brine shrimps and clam shrimps are discussed, based on Pennak except where noted otherwise.<sup>6</sup>

Tadpole shrimps get their name from their resemblance to tadpoles when swimming. According to Pennak, they may be gray, blue, green, and orange or reddish. Green and reddish tones predominated in the collected specimens. Colour is largely dependent on the food ingested.

Notostraca have sessile, compound eyes, a large shield-like carapace covering most of the body, and 35 to 71 pairs of legs (Fig. 3). Neither the number of legs nor the number of segments is constant within a species.<sup>4</sup> The head forms a well defined body region; the trunk however, is not clearly divisible into thorax and abdomen. So difficult is it to define segments in these shrimps that they are referred to as to body rings.<sup>4</sup>

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\*Department of Biology,  
University of Saskatchewan,  
Saskatoon, Saskatchewan.





Fig. 1. Dorsolateral view of *Lepidurus couesii*. Note characteristic extended telson of the genus. True length 4.5 cm.

Fig. 2. Ventral view of *L. couesii* showing swimming legs and tactile structures. True length 4.5 cm.

The legs are all basically similar, being forked (biramous), flat, translucent, lobed and bristly. The first one or two pairs of legs are modified to serve as tactile structures, probably used to locate food. The 11th pair of legs in the female is modified to form a brood-chamber in which the eggs are

carried. The legs of tadpole shrimp are reduced in size from front to back.

The legs are used to swim or glide by means of complex beating movements which pass from anterior to posterior.<sup>8</sup> Tadpole shrimps often creep or burrow on and in soft substrates.<sup>6</sup>



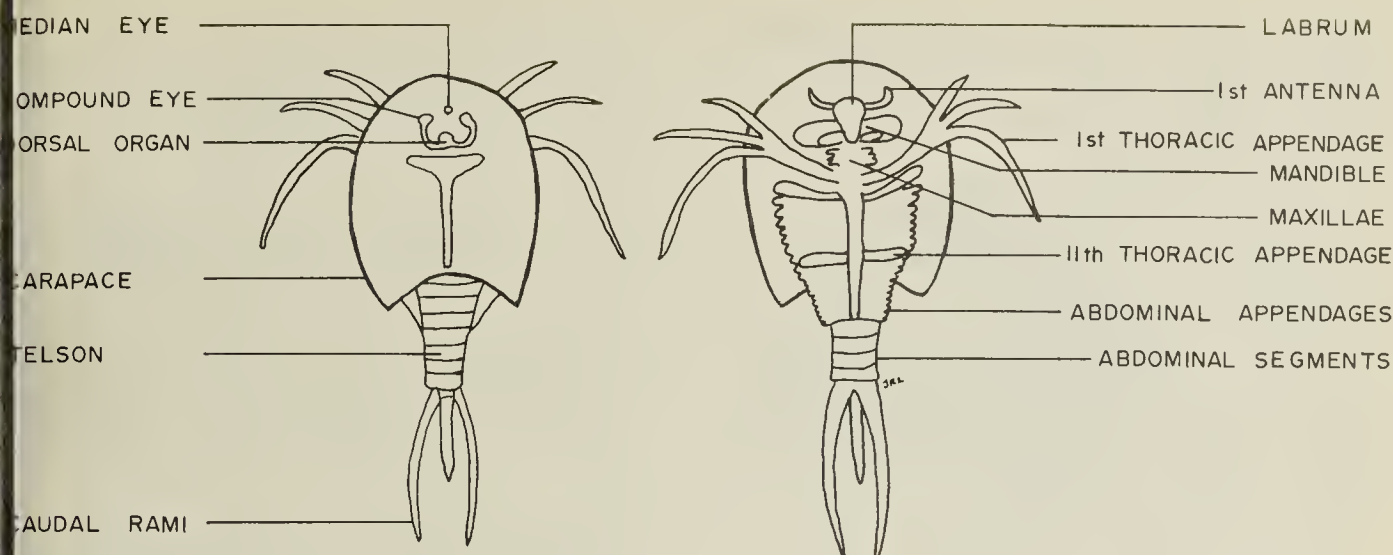


Fig. 3. Ventral and dorsal diagrams showing basic structures of Notostraca (after Weiz 1966).

Food consists mainly of algae, bacteria, protozoa, rotifers and detritus. Notostracans have also been observed feeding on dead tadpoles, earthworms, molluscs and frog eggs. Food is removed from the water by movements of the legs; material is strained out unselectively by bristly appendages.<sup>8</sup> This food is concentrated in a central groove between the legs and moved toward the mouth.<sup>6 8</sup> At the mouth food selection and mastication occurs prior to ingestion.

Reproduction among Eubranchipods is not well understood. It may be either sexual or parthenogenic, i.e., reproduction occurring from unfertilized eggs, and it may occur both ways in the same population. In certain populations males are not abundant. Both types of eggs are retained in the receptacle between the female's 11th legs for one to several days, before being released and falling into the mud. Eggs may number from 10 to 250 per clutch.

Resting or winter eggs are also formed. These special thick-shelled eggs are produced at the end of the season

and are the only way that the population survives periods of unsuitable conditions. This is very important because these shrimps usually inhabit temporary ponds and are frequently subject to dessication or freezing.

In small ponds only one generation of tadpole shrimps is usually produced per year. Eggs hatch early in the spring; the animals mature rapidly, producing eggs which will not hatch until the following spring.

Shrimps are a frequent part of the diets of amphibians, diving beetle and caddis fly larvae. Some other insects may use them as an occasional food source. Tadpole shrimps have been dried and used as food by Indians of the United States and Mexico.<sup>6</sup> There is also one reported incidence of depredations by this group on California rice crops.<sup>7</sup>

The development of Eubranchipods in spring and their sudden disappearance in summer or early autumn is believed to be largely determined by water temperature and dissolved



oxygen concentration.<sup>3 5</sup> They usually appear after water temperature exceeds 4°C and disappear after it exceeds 13° to 30°C.

Tadpole shrimps are perhaps most interesting for their sporadic occurrence, both in time and space. They are most numerous and most frequently observed in small prairie pools. Within the range of temporary ponds little habitat preference has been noted.

Their general distribution is documented by Linder, their Canadian distribution by Hartland-Rowe.<sup>4 2</sup> Four species occur in Canada. In Saskatchewan only two species have been found, *Lepidurus couesii* and *L. lynchi*.<sup>2</sup> *Lepidurus couesii* has not been previously recorded in Beaver Creek, to my knowledge, nor in any other flowing system in Saskatchewan.

Photography by J. Waddington.

- <sup>1</sup>EDMONDSON, W. T. 1959. *Fresh-water biology*. John Wiley and Sons Inc. New York. 1248 p.
- <sup>2</sup>HARTLAND-ROWE, R. 1965. *The Anostraca and Notostraca of Canada with some new distribution records*. The Can. Field-Nat. 79:185-189.
- <sup>3</sup>HORNE, F. R. 1967. *Effects of physical-chemical factors on the distribution and occurrence of some southeastern Wyoming phyllopods*. Ecology 48:474-477.
- <sup>4</sup>LINDER, F. 1952. *Contributions to the morphology and taxonomy of the branchiopod Notostraca, with special reference to the North American species*. Proc. U.S. Nat'l. Mus. 102:1-69.
- <sup>5</sup>MOORE, W. G. and A. BURN. 1968. *Lethal oxygen thresholds for certain temporary pond invertebrates and their application to field situations*. Ecology 49:349-351.
- <sup>6</sup>PENNAK, R. W. 1953. *Fresh-water invertebrates of the United States*. Ronald Press Company New York 769 p.
- <sup>7</sup>ROSENBERG, L. E. 1946. *Fairy shrimps in California rice fields*. Science 104:111-112.
- <sup>8</sup>WEIZ, P. B. 1966. *The science of zoology*. McGraw-Hill Book Co. Toronto. 875 p.



## ALDERFLIES

by D. M. LEHMKUHL\*

*This is the second in a series of articles on aquatic insects based on drawings by A. R. Brook and sponsored in part by the Student Encouragement Committee of the Entomological Society of Canada.*

For everyone except fly fishermen, alderflies will be one of the less familiar groups of aquatic insects (Figs. A, B). They are in the Order Megaloptera, or Neuroptera, depen-

ding on which book you use, and comprise the Family Sialidae which is made up of the single genus *Sialis*. (Closely related are the Dobsonflies whose larvae are called hellgrammites by fishermen; they belong to the Family Corydalidae; I have no record of these from the Prairie Provinces).

Adult *Sialis* are blackish rotund in

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\*Department of Biology,  
University of Saskatchewan,  
Saskatoon, Sask.



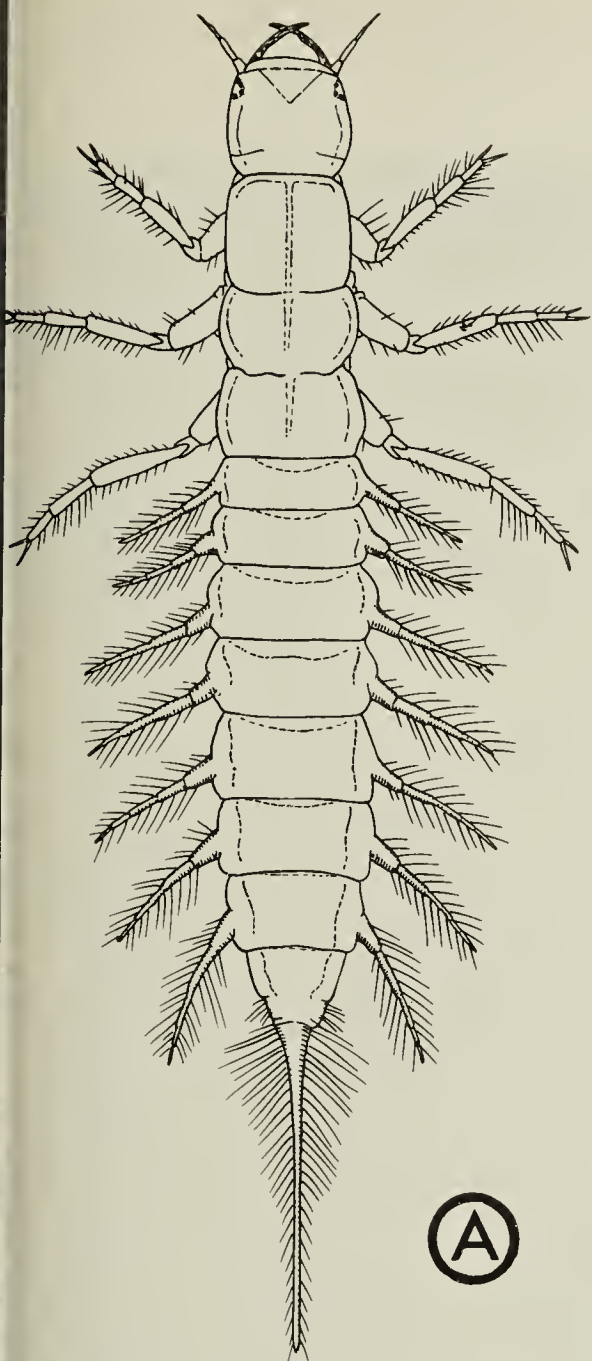


Fig. A. Larva of *Sialis*.



Fig. B. Adult of *Sialis*.

sects (Fig. B) about  $5/8$  of an inch long. Larvae can be recognized by the conspicuous mandibles, the seven pairs of gills on the body segments, and the single "tail" (Fig. A). Adults are usually found walking on or feebly flying through vegetation along streams or near ponds where the larvae develop. Adults probably do not feed at all except on drops of nectar or dew but the larvae are voracious

predators, feeding on any insect larvae or crustaceans they can catch.

While seldom seen, alderflies are by no means rare. There are about 20 known species in North America, half of which occur in Canada. Based on Ross (1937) four species are reported from Alberta (*S. californica* Banks, *S. cornuta* Ross, *S. hamata* Ross, and *S. velata* Ross) while only *Sialis velata* is



known from Saskatchewan and Manitoba.<sup>5</sup> *S. itasca* Ross occurs in nearby North Dakota.<sup>5</sup>

Specimens in my collection from Saskatchewan are all from the North Saskatchewan River or from the Little Red River at Prince Albert. Alderflies undoubtedly have a much wider distribution in the prairies and specimens from readers would be very useful in determining the complete range.

Studies have shown that larval life lasts 1 or 2 years depending on geographical location, the abundance of food, and when eggs are laid. In Saskatchewan both half- and full-grown larvae have been collected in October and November and adults are present in June. The presence of two size classes in autumn may indicate that the half-grown larvae are in their 1st year, the larger larvae are in their 2nd year and that adults emerge in the 3rd year of life. Obviously, work remains to be done on the group in the prairies.

Alderflies have four stages to the life cycle: egg, larva, pupa, and adult. Upon reaching maturity, larvae leave the water, travel several feet up the shore, dig a tunnel with a chamber at the end, pupate there and, after a few

weeks, transform to the adult stage. After courtship and mating, eggs are laid in neat rows forming a single layered mass on vegetation, logs or structures such as bridges which project over the water. After about 2 weeks, those larvae which escape the attacks of the wasp *Trichogramma*, an egg parasite, emerge from the egg and drop into the water and continue the life cycle.

For those wishing to make collections both larvae and adults may be preserved in alcohol, or adults may be mounted on pins.<sup>3</sup>

Further reading (available at most University libraries).

<sup>1</sup>AZAM, K. M., and N. H. ANDERSON. 1969. *Life history and habits of Sialis rotunda and S. californica in western Oregon*. Annals Entomol. Soc. America 62:549-558.

<sup>2</sup>FLINT, O. S. 1964. *New species and new state records of Sialis (Neuroptera: Sialidae)*. Entomological News 75:9-13.

<sup>3</sup>LEHMKUHL, D. M. 1975. *Saskatchewan Damselflies and Dragonflies*. Blue Jay 33:18-27.

<sup>4</sup>PRITCHARD, G., and T. G. LEISCHNER. 1973. *The life history and feeding habits of Sialis cornuta Ross in a series of abandoned beaver ponds (Insecta: Megaloptera)*. Can. J. Zool. 51:121-131.

<sup>5</sup>ROSS, H. H. 1937. *Nearctic alderflies of the genus Sialis (Megaloptera, Sialidae)*. In: Studies on Nearctic aquatic insects. Bull. Illinois Nat. Hist. Survey, 21:57-78.



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I named this place Listening Point because only when one comes to listen, only when one is aware and still, can things be seen and heard. Everyone has listening-point somewhere. It does not have to be in the north or close to the wilderness, but some place of quiet where the universe can be contemplated with awe. — Sigurd F. Olson, Listening Point.



# WILLOW BEETLE — EGG TO PUPA

by RALPH UNDERWOOD



Laying eggs on leaf x16





Emerging larva is markedly pale in contrast with hour old siblings. x25

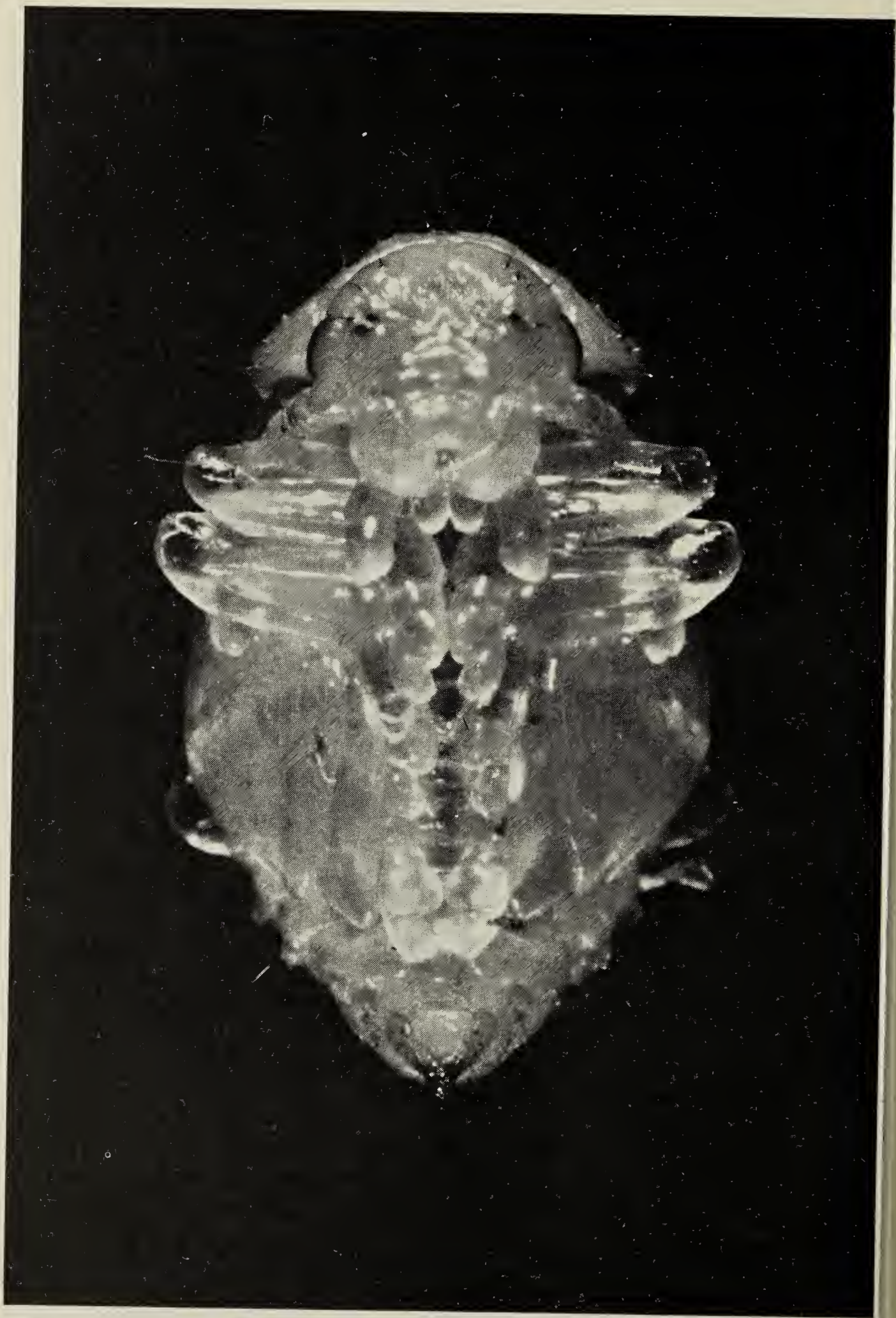


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Three week old larva x25





Pupa





Whooping Cranes

Lorne Scott

## 1975 WHOOPING CRANE PAGEANT

*From North Dakota Outdoors, August, 1975.*

Man's intervention in the Whooping Crane's world this spring has been significant. But the preliminary results are tinged with nature's characteristic sternness. The life-and-death, cyclic drama of nature has been played out amidst international, national and state efforts to engineer an overall gain for these rare birds.

The final results are not yet in, but the high points of this spring's bio-drama include:

- frantic and finally successful attempts to scatter nine migrating whoopers off a Nebraska marsh boiling with infectious avian cholera;

- the hot-house hatching and the death 15 days later of a fragile whooper chick named "Dawn";

- the tryout of a bold new foster parent concept involving snatching whooper eggs from nests in Canada and slipping them under Sandhill Cranes in Idaho where 9 of 14 of the eggs hatched;

- the natural hatching of 11 of 15 whooper eggs in the wilds of north-west Canada.

Obvious lessons have been learned from these episodes but none more profound than the realization that man, who is chiefly responsible for the precarious nature of the Whooping



Crane's existence in the first place, must continue to intercede on behalf of the whoopers if they are ever to be restored to a healthy population.

The footlights went up early on this season's pageant. Unseasonal snow and freezing rain in April over the Dakotas, Nebraska and down into Kansas blocked or slowed the migration of dozens of waterfowl species north to Canada and beyond. Rafts of ducks, gaggles of geese and flocks of sandhill cranes crowded into every available water surface along the storm's front in southern Nebraska and huddled down for the duration. Within days the stress on the overcrowded ponds and sloughs touched off an outbreak of avian cholera, a deadly disease that in a week spread and killed more than 15,000 of the birds.

Into this biological maelstrom flew nine whoopers enroute to Canada. Only the alertness of Nebraska conservation officials enabled federal and state bureaucrats, farmers and biologists to join forces, obtain the necessary emergency waivers of the Endangered Species Act, and use firecrackers and low flying aircraft to haze the whoopers up and away from the infected marsh where they had settled. Nature intervened forcefully with freezing rain and sleet. Thirty-six hours passed before the birds were finally flushed.

Scientists don't know if the whoopers contracted the disease or not. They are not even certain that Whooping Cranes are susceptible to it. They assume, though, that a whooper contracting the cholera will either die after a few days or become a carrier of the disease. Since the whole flock ultimately showed up intact at their Canadian breeding grounds, obviously none died from the cholera. Whether or not any are carriers remains to be seen.

Dawn's hatching on May 29 and his death 15 days later represents another, albeit disappointing, milestone in the U.S. Fish and Wildlife Service's efforts to breed whoopers in captivity. The Service began captive breeding in 1967 at the Patuxent Wildlife Research Center in the hope of producing enough Whooping Cranes eventually to restock wild flocks. One severe winter hurricane along the Texas Gulf Coast could wipe out the sole existing wild flock in a matter of hours, so the effort must go on. But the road has been a troublesome one. As Dawn's death indicates, nature cannot be readily reproduced in the laboratory. Despite what they have learned from elaborate research in Sandhill Crane breeding, scientists are still encountering environmental congenital and pathological puzzles in the Whooping Crane breeding program.

Their search for the right way has been as cautious as an infantryman's probe for landmines with a bayonet tip. On five different occasions since 1967, with the help of the Canadian Wildlife Service, biologists have removed a total of 50 eggs from nests in Canada and flown them to the Patuxent Wildlife Research Center in Maryland. There, 41 have been hatched and 19 of the chicks raised to maturity.

This year one pair of the 19 captive reared birds mated, and the female laid three eggs. After the first egg was laid, artificial insemination assisted nature. Two of the three eggs were fertile and from one Dawn was hatched. The first of the second generation of captive whoopers, Dawn gave new hope to scientists managing the Whooping Crane captive breeding program.

A possible congenital deformity that twisted Dawn's lower right leg bone prevented the chick from moving nor





Whooping Crane

Lorne Scott

mally. Scientists tried to help the bird walk by taping its legs, but the bird gradually weakened and finally stopped eating and became dehydrated. On June 14 Dawn died.

Although the loss of the chick is regrettable, scientists at the Center are not pessimistic. They believe the breeding of the Whooping Crane was a major stride forward and expect more eggs and chicks next year. They compare the whooper breeding program to one for the Sandhill Crane, another crane species studied and bred at Patuxent. Prior to 1969 no sandhills had bred and hatched in captivity. Last year, more than four dozen chicks

were produced. Production methods for these birds are now routine. The U.S. Fish and Wildlife Service believes similar success will ultimately characterize the Whooping Crane breeding program.

May 29 also witnessed the opening act of yet another Whooping Crane cliff-hanger. The foster parent program in Idaho, designed to start up a second wild flock with an entirely different set of winter and summer home areas, adds insurance against natural disasters.

The egg-napping of 14 eggs from Canadian nests went off without a hitch. The eggs arrived and were



placed in their Sandhill Crane foster parents' nests on May 29. Then the vigil began. Scientists from the University of Idaho involved in the project feared interlopers; and, sure enough, two of the 14 whooper eggs disappeared for reasons still not known. Fish and Wildlife Service enforcement officers had been dispatched to patrol the Refuge area during the critical hatching period because of reports of springtime vandalism at and near the Refuge. In addition to the two eggs that disappeared, three others proved infertile.

Nine hatched successfully, though, and initial observations indicate the whooper chicks are adapting well to their new environment. Within the first 24 hours after hatching some of the chicks wandered as far as 100 yards from the nests. Other observations suggesting their adaptation to foster parenthood is working well. One proud father Sandhill Crane was seen to stop at the first hint of danger and emit a shrill note which prompted the chicks to freeze in place immediately. They remained glued to the spot until they heard the all-clear signal. The parent birds have displayed vigorous defensive gestures at any glimmer of trouble. In several instances, parents have run away from the chicks and picked up sticks in their beaks, tossing them into the air away from the chicks in an obvious attempt to divert attention.

As of late June all nine of the Idaho chicks are reported doing exceptionally well. They have been seen foraging for insects, running in the tall grass, and even swimming like bobbing corks behind their foster parents. They have grown rapidly and now stand about a foot tall, with their heads and beaks visible above the prairie grass. Predators are their greatest danger during the next 2 months or so, until they learn to fly. Coyotes or raccoons could attack them from ground level.

Eagles, hawks, or owls could pounce on them from the sky. Quirks of weather and a wide variety of other natural influences could kill them one by one or in a group. High mortality among young whoopers is normal in the wild.

In Wood Buffalo National Park in Canada 15 eggs were left after the egg-napping. Eleven of these have hatched, and the chicks are now reported displaying the same vigorous zest for life as their transplanted brothers and sisters in Idaho.

In summary, then, it has been a good year for the Whooping Crane, so far. The final score will not be tallied until late next fall when the adults and young migrate south. How many of the juveniles will make it is difficult to predict. Those in the naturally wild flock are expected to begin their fall flight south in late September or early October and reach the Texas Gulf Coast in staggered sequence through December. In Idaho, a Fish and Wildlife Service scientist will drive south following the whoopers and their Sandhill Crane parents to keep track of their migration to the Bosque de Apache National Wildlife Refuge in New Mexico. What perils await these birds are unknown, as theirs will be the first migration of this sort closely monitored by man.



To see the world in a grain of sand,  
And a heaven in a wild flower;  
Hold infinity in the palm of your hand  
And eternity in an hour.

*William Blake*



# BLACKBIRD BANDING RESULTS

by J. A. SLIMMON\*

In 1963, under the direction of Dr. B. Gollop, Canadian Wildlife Service, I began banding Red-winged Blackbirds and Yellow-headed Blackbirds on marshes near Saskatoon. Only nestlings and local young which had just recently left the nest were banded with emphasis placed on finding Red-winged nestlings rather than Yellow-headed nestlings. In spite of this approach however, in two of the subsequent 11 years, more Yellow-headed nestlings were banded than Red-winged.

Table 1 shows the number banded in each of the 11 years since 1963, the number of birds subsequently recovered, and the year of each recovery. All recoveries are of Red-winged Blackbirds.

Table 2 provides the detail of each recovery. The exact recovery date of bird #5 is uncertain. The only date available to the Patuxent Wildlife Center was the postmark on the letter in which the band was returned.

A review of these recoveries show that three are within year recoveries. Recovery numbers 4 and 6 were found dead at the same slough on which they were banded, while number 3 was recaptured at a banding slough.

Recovery pattern of numbers 1, 2 and 5 is interesting. The first two (number 1 and 2) suggest that Red-winged Blackbirds banded in the Saskatoon area return to the same

'general' area. If this is correct, number 1 and 5 returned four times while number 2 returned three times. Recovery number 5 indicates that some Saskatoon Red-winged Blackbirds migrate as far south as Mexico. The general recovery area of number 5 was near Carranza some 1,180 miles southeast of the California-Mexico border and 560 miles southwest of the Texas-Mexico border.

A conclusion which could be reached from Table 1 is that in a period of 12 years (in ten of which birds were banded) of the 1,467 nestling Red-winged and Yellow-headed Blackbirds banded only a 0.20% of the birds banded were recovered. This suggests that, if one were to hope for one recovery per year, an average of 500 nestling Blackbirds would have to be banded each year.



\*2526 Hanover Avenue,  
Saskatoon, Saskatchewan.



Table 1.  
Banding and Recoveries of Blackbirds

<i>Year</i>	<i>Yellow-headed</i>	<i>Red-winged</i>	<i>Total</i>	<i>Recoveries</i>	<i>Year of recovery</i>
1963	123	—	123	1	1967
1964	16	24	40	—	—
1965	62	145	207	1	1968
1966	52	42	94	—	—
1967	106	26	132	—	—
1968	—	—	—	—	—
1969	93	32	125	1	1974
1970	71	—	71	—	—
1971	—	—	—	—	—
1972	157	92	249	—	—
1973	134	116	250	2	1973
1074	101	75	176	1	1974
TOTAL	915	552	1,467	6	

Table 2.  
Details on recoveries of banded Blackbirds from Saskatoon

<i>Re-covery No.</i>	<i>Date banded</i>	<i>Location of banding</i>	<i>Date recovered</i>	<i>Location of recovery</i>	<i>Recovered by</i>	<i>Age at recovery</i>	<i>State at recovery</i>
1	22/6/63	Hudson Bay Marsh	8/9/67	4 mi. N. of Leroy, Sask.	Cal Torwalt, Leroy, Sask.	4 yrs., 2-1/2 mos.	shot
2	21/6/65	Hudson Bay Marsh	19/5/68	2 mi. E. of Warman, Sask.	Rick Moore, Saskatoon, Sask.	2 yrs., 11 mos.	shot
3	19/6/73	Gevelot Slough	7/7/73	Same location	Stuart Rosmussen, Saskatoon, Sask.	18 days+	caught and released
4	2/7/73	Clarence Avenue, South	31/7/73	Same location.	Vernon Linn, Saskatoon, Sask.	29 days+	found dead
5	30/6/69	North Airport Slough	?/4/74	Carranza, Mexico.	Ramiro Rodriguez, Mexico.	4 yrs., 9 mos.	shot
6	23/6/74	Hudson Bay Marsh	27/6/74	Same location.	Dean Bisset, Saskatoon, Sask.	4 days+	found dead







Trumpeter Swan

Fred Lahrman

## HIGHLIGHTS OF SASKATOON BIRD OBSERVATIONS 1970 - 1974

by STAN SHADICK\*

For several years members of the Saskatoon Natural History Society have contributed records of bird observations for publication in a seasonal report. Up to 1971 this report was called the *Saskatoon Bird Review* and was edited by J. B. Gollop. After 1971 this report was renamed *Saskatoon Field Notes* and was edited by myself with assistance from Wayne Renaud, Wayne Harris, Ed Driver and Ron

Bobowski. The district covered for these reports is a 3600-square-mile block around Saskatoon which includes Townships 31 to 40, Ranges 1 to 10, West of the 3rd Meridian. Some towns near the borders are Radisson to the northwest, Elstow to the east, Hanley on the south and Tessier on the west. This article lists the highlights of bird observations published in these reports from 1970 through 1974. Highlights of observations prior to 1970 have been published in previous issues of *Blue Jay*.

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\*810 Main Street,  
Saskatoon, Saskatchewan.



**GREAT EGRET** (formerly COMMON EGRET): The first record of this species for Saskatoon was an individual observed at Pike Lake Provincial Park on June 10-12, 1974. It was first seen by Mary Houston and later observed by Jim Hogg, John Shadick, Mr. and Mrs. Hoyte and the writer.

**TRUMPETER SWAN:** One identified by call on Aug. 22, 1971, by G. Galloway and other members of a Saskatoon N.H.S. canoe trip along the South Saskatchewan River near Saskatoon was the first definite local record. Other possible sightings were made on Aug. 10 and 29, 1971.

**GREATER SCAUP:** A male was observed at Blackstrap Lake at close range on Nov. 12, 1972. On April 26, 1973, another male bird was observed on a dugout near Vanscoy. These observations, the first for Saskatoon, were both made by the writer.

**OLDSQUAW:** The first record of this species occurred on Nov. 15, 1970, when a flock of 27 birds was observed at Blackstrap Lake and a single bird was sighted on the river in the city. These sightings were made by J. B. Gollop, Maureen DuWors, Stuart Houston, John and Stan Shadick. On Nov. 7, 1974, a single bird was again sighted on Blackstrap Lake by J. B. Gollop.

**HARLEQUIN DUCK:** A male was sighted at the weir on the river in the city between June 22 and 26, 1973. This was the first Saskatoon record. Further details in the June, 1974, *Blue Jay*.

**BROAD-WINGED HAWK:** The first breeding record of this species for Saskatoon was a nesting pair found near Pike Lake by Wayne Harris on May 25, 1974. Three young were banded at this nest by Stuart Houston on July 10.

**GYRFALCON:** Definite sightings made by various members of the Saskatoon N.H.S. were as follows: Feb. 26, 1970; Oct. 23, Nov. 24, Dec. 26 and 27, (dark phase), and Dec. 29, 1971 (white phase); Jan. 9 and 10, Oct. 7 and 27, and Dec. 26, 1973, and Oct. 5, 1974. The only previous record was on April

16, 1967.

**YELLOW RAIL:** Observations based on calls were made at marshes south of the city on Aug. 2, 1970, by R. E. Gehlert and on June 5, 1973, by Wayne Harris.

**WHIMBREL:** The first definite sighting of this species was a group of three birds observed by Wayne Harris near Dundurn on June 6, 1973.

**(WESTERN SANDPIPER):** A probable record of this species was observed by Alan Smith near Vanscoy on July 25, 1974. It was observed for 20 minutes using a 60X scope and the following field marks were noted: rusty cap and crown, black legs, long bill with "droop" at end, breast markings grey instead of brown. Unfortunately, as a second observer was not available and a photograph could not be taken, this record cannot be considered confirmed. There is no previous definite record for Saskatchewan.

**HUDSONIAN GODWIT:** Unusually large concentrations of this species were reported on Porter Lake, 11 mi. ENE of Saskatoon. Highest estimates were 1970: 59; 1971: 847 + 212 unidentified godwits; 1972: 89 + several hundred unidentified godwits; 1973: 1,150. However in 1974 only four birds were seen all summer. Further details in the Sept., 1971, and June 1974 issues of *Blue Jay*.

**RUFF:** The first record of this European straggler was made on May 9, 16 and 19, 1970, when a single bird was observed at a slough near the airport. See the March, 1971, *Blue Jay* for further details.

**MEW GULL:** The first record of this species was observed at the weir in the city by Wayne Harris on Oct. 4, 1973. The bird was described as a white-headed gull with a solid yellow bill with no mark of any kind.

**LITTLE GULL:** Saskatoon's first record was an immature bird studied for 15 minutes at Blackstrap Lake on Oct. 6, 1973, by J. B. Gollop.

**CASPIAN TERN:** Four birds at Blackstrap on June 26, 1970, (J. B. Gollop) and seven birds there on July 18, 1970, (J. A. Wedgwood) were the





Winter Wren

C. J. Trefry

first records for the district. An immature was noted at Hague Ferry just north of the district on Sept. 9, 1973, by Stuart Houston.

**BAND-TAILED PIGEON:** A single bird observed in the city on Sept. 30, 1970, by Mrs. S. Aldous was the first local record.

**BLACK-BACKED THREE-TOED WOOD-PECKER:** An individual observed by Alan Smith in the city on Nov. 20, 1971, was the third record for the district.

**NORTHERN THREE-TOED WOOD-PECKER:** Saskatoon's first record was a female observed by Lynn Oliphant in the city on Oct. 11, 1974.

**ALDER FLYCATCHER:** The first nest of this species was found near Ardath on July 31, 1971, by Wayne Harris, J. A. Wedgwood, J. B. Gollop and the writer.

**ROUGH-WINGED SWALLOW:** A pair nesting at Eagle Creek near Asquith on May 27, 1973, was the first record of this species. A pair nested again at the same location in 1974. (J. B. Gollop, Stan Shadick)

**CLARKE'S NUTCRACKER:** An immature bird was observed Nov. 18-23, 1972, south of Saskatoon. This was the first record for Saskatoon. (See *Blue Jay*, Sept., 1973)

**RED-BREASTED NUTHATCH:** A nesting pair found by the writer in a city park in May, 1974, was the first breeding record.

**WINTER WREN:** One observed in the city on Oct. 22 and 24, 1972, by Mr. and Mrs. J. A. Wedgwood was Saskatoon's second record. Another was observed just north of the city on Oct. 2, 1973, by Wayne Harris.

**ROCK WREN:** The first record of this species was observed in September, 1974, south of Floral by W. J. Maher.

**BENDIRE'S THRASHER:** On May 27, 1972, the first Canadian sight record of this species was observed for about 15 minutes with binoculars and spotting scope by Dr. and Mrs. J. B. Gollop west of Hanley. The bird was a brown colour (not pale or reddish), had a straw-coloured eye, streaked front and no wingbars.

**VARIED THRUSH:** Single birds were observed in the city on Sept. 4 and 12, 1970, and on Oct. 4, 1971, by J. D. Hogg, Mrs. S. Aldous and Mrs. Pat O'Neil. The only previous sighting was on Oct. 8-11, 1969.

**WOOD THRUSH:** Saskatoon's first record of this species was observed in the city on May 24, 1973. Further details in the March, 1974, *Blue Jay*.

**NORTHERN PARULA WARBLER:** Two observed in the city by Frank Roy, Fred Waite and Martin Brilling on May 27, 1972, was the first record for Saskatoon.

**BLACK-THROATED BLUE WARBLER:** A female observed in the city on Sept. 19, 1972, by the writer was the first record. Males were seen in the city on





Common Raven

Robert J. Long

Oct. 12 and 13, 1972, by Lynn Oliphant and on Oct. 27, 1973, by Dr. and Mrs. Houston.

**YELLOW-RUMPED WARBLER:** A brood of three young being fed out of the nest near the city on July 10, 1973, was the first breeding record (Wayne Harris).

**BLUE GROSBEAK:** Saskatchewan's first sight record was a pair observed by Dr. and Mrs. Pepper on May 26, 1974, north of Pike Lake. The large white beak and two rusty wingbars separated the male from a bluebird. This species is not usually found north of the Black Hills in South Dakota.

**DICKCISSEL:** On July 4, 1973, two males and at least one female were identified by Mr. and Mrs. J. A. Wedgwood in a forage crop south of the city. The only previous record was in July, 1966.

**LAZULI BUNTING:** On July 4, 1973, the first record of this species was observed by J. A. Wedgwood west of Dundurn.

**COMMON REDPOLL:** In June, 1970, a flock of five or six flying young was the second breeding record for the city.

They were observed in the city by Mrs. S. Aldous.

**SMITH'S LONGSPUR:** On May 10, 1970, three birds were observed by J. A. Wedgwood near Tessier. Single birds were observed by Wayne Renaud and J. P. Sector northeast of the city on May 4, 1972, and again on May 13, 1972, by J. B. Gollop. On May 8, 1973, a flock of approximately 25 birds was observed near Meacham, just east of the district by the writer.

In addition to the above list the following observations during this period are worthy of brief mention: Cinnamon Teal (4 birds/3 dates), Wood Duck (1/1), Whooping Crane (18/11), Parasitic Jaeger (1/1), Great Crested Flycatcher (5/8), Gray Jay (4/4), Common Raven (55/19), Mockingbird (6/9 plus one pair which summered near Clavet), Eastern Bluebird (9/4 plus one female which mated with a male Mountain Bluebird and raised five young in 1974), Townsend's Solitaire (1/1), Western Tanager (2/2, and Grasshopper Sparrow (1/1).





# FACTORS INFLUENCING NEST SITE SELECTION OF BALD EAGLES IN NORTHERN SASKATCHEWAN AND MANITOBA

by JONATHAN M. GERRARD,\* PETER GERRARD,\*\*  
WILLIAM J. MAHER†  
and DOUGLAS W. A. WHITFIELD††

In the course of 7 years' research on Bald Eagles in Northern Saskatchewan and Manitoba, we gained some impressions about eagle nest sites.<sup>3 13</sup> In order to test these observations, we reanalyzed our Bald Eagle data collected from 1968 through 1974. Our information is from extensive aerial surveys of Bald Eagles in central Saskatchewan and Manitoba in 1969<sup>13</sup> and a survey of central and northern Saskatchewan in 1974. Also, we have been studying the eagle population since 1968 on Besnard Lake which is located in central Saskatchewan in the Northern Coniferous forest of the Precambrian shield about 40 miles west-northwest of Lac La Ronge.<sup>11 12</sup>

**METHODS.** In 1974 our Bald Eagle

survey involved aerial censuses of shoreline in 20 randomly selected sample units of boreal forest. Between units we flew straight-line transects at 300 feet altitude; all eagle nests seen within 220 yards of the airplane were recorded. All 1974 data in this paper are from these transects. In analyzing the results of the transects, we considered all nests within 220 yards of a lake or river as being in shoreline habitat and all nests beyond that as being in inland habitat.

To understand the characteristics which make a shoreline attractive for a Bald Eagle to nest, we analyzed all nests visited in July, 1969, as to kind of tree it was in, whether it was on an island or near the edge of a lake or river, and whether it was on large or small lakes or rivers.

We arbitrarily considered all lakes with a total shoreline of 7 miles or more as large and all rivers delineated by two lines on 1:250,000 maps as large rivers (200± feet and wider). All other lakes and rivers were considered to be small. We also noted on which shore the nest was situated on islands more than 1 sq mi in area and along mainland shores. This is referred to as the orientation of the

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\*954 - 15th Ave. Southeast,  
Minneapolis, Minnesota. 55414

\*43 Scotia St.,  
Winnipeg, Manitoba.

†Department of Biology,  
University of Saskatchewan,  
Saskatoon, Saskatchewan.  
S7N 0W0

††Department of Botany,  
University of Alberta,  
Edmonton, Alberta.  
T6G 2E9





Fig. 1. An adult bald eagle in a tree perched just above its nest.

J. M. Gerrard

nest; a nest on an east shore was recorded as oriented west.

The location of each nest on Besnard Lake was plotted on forest inventory maps made from 1968 and 1969 aerial photographs. They show tree species and height and crown cover. By comparing forest types on the entire shore with the vegetation where eagles nested, we tried to determine what forest habitat the birds prefer.

Bald Eagles return to the boreal forest in April when the lakes are still frozen. The only feeding areas available to them are rapids and places around the lake where streams enter to create small areas of open water. These are important fish spawning areas and probably important eagle feeding spots. Because the presence of a spring food supply might influence

the location of nests, we analyzed our nest data to see if successful nests were correlated with distance from a stream mouth. We restricted this analysis to streams that were actually open and used by spawning fish in spring.

All our measurements were made on 1:250,000 National Topographic System maps. Shoreline measurements for the 1974 survey were made by measuring the shoreline with dividers set at 1/2-mile spacing. All other map measurements were made with a map measurer with a 1/4-inch wheel.

**RESULTS.** In our straight-line transects flown in 1974, we searched 47.8 sq mi of shoreline habitat and 140.6 sq mi of inland habitat. Eighteen Bald Eagle nests were found along the shoreline and no eagle nests were found in the inland habitat. The difference is highly significant and provides statistical confirmation of our earlier impression that Bald Eagles in northern Saskatchewan strongly prefer shoreline habitat for their nests ( $\chi^2=53$ ,  $DF=1$ ,  $P<0.001$ ).

Four eagle nests were found in 26.0 sq mi of shoreline habitat on small water bodies, whereas 14 eagle nests were found in 21.2 sq mi of shoreline habitat on large water bodies. The difference is statistically significant, and this finding confirms our impression that Bald Eagles prefer to nest on large lakes and rivers ( $\chi^2=53$ ,  $DF=1$ ,  $P<0.01$ ).

In 1969, 110 nests were found along 589 miles of island shoreline and 14 nests were found along 2,480 miles of mainland shore. The difference between island and mainland shoreline is statistically significant and shows the preference for nest sites on island ( $\chi^2=91$ ,  $DF=1$ ,  $P<0.001$ ).

Eagle nests do not all face in the same direction nor are they oriented at random. Table 1 shows the direction faced by 136 nests found on the 196





Besnard Lake and vicinity. The study area included Saskatchewan north of about 54° lat. and into Manitoba. Note the northeast-southwest orientation of the Churchill River lakes and tributaries.

survey; this total omits all nests on islands less than 1 sq mi in area and nests on narrow peninsulas because they could not readily be assigned a single direction. The largest number of nests (48, 35%), faced west. The distribution of nests is significantly different from random and suggests that eagles prefer east and southeast shores of water bodies so that nests face west and northwest ( $\chi^2=81.7$ ,  $DF=7$ ,  $P<0.001$ ).

Two of our 1969 nests were on the tops of cliffs which rose from the water in a steep incline. The remaining 288 nests were in trees. Of these 156 (54%) were in trembling aspen (*Populus tremuloides*), 90 (30%) were in spruce (*Picea*) and 39 (15%) were in jack pine (*Pinus banksiana*). The other three nests were in balsam poplar (*Populus balsamifera*) and white birch (*Betula papyrifera*). Nests in the more northern part of the area surveyed tended to be



in jack pine; in the central part most nests were in poplar and spruce, while nests in the south, in the Cumberland marshes, tended to be in dead aspen.

Finally, we used our long-term studies of eagles nesting at Besnard Lake to find out some characteristics of the forest vegetation that seems to influence eagles in locating their nests. Forest Service maps classed the vegetation into five types: mixedwood with softwood dominant, softwood, mixedwood with hardwood dominant, hardwood, and marsh or sparsely treed muskeg. The maps also classified forest stands into four height classes and into four classes of crown cover. We measured the number of shoreline miles around the lake in each forest type, height and cover class and determined the number of known nests in each category. The results show that eagles prefer softwood or forest with softwood dominant: 67% of 43 nests were in those two habitats (Table 2). Similarly, eagles do not like forests with dense crown cover, as 63% of the nests were in forests of 30-50 percent coverage (Table 3). Forest of more or less cover had significantly fewer nests per mile of shoreline ( $\chi^2=42.3$ ,  $DF=1$ ,  $P<0.001$ ).

Bald eagles showed a striking preference for tall trees (Table 4). Shoreline habitat with trees above 70 feet had 1.04 nests per mile, almost four times the density of any other

TABLE 1. Orientation of nests found on large islands and mainland shoreline in 1969.

Direction Nest Faced	Nests	
	No.	%
N	10	7
NW	18	13
W	48	35
SW	6	4
S	17	13
SE	12	9
E	21	15
NE	4	3

category. This difference was statistically significant ( $\chi^2=34.1$ ,  $DF=1$ ,  $P<0.001$ ).

The last factor analyzed was the importance of open water in the spring on the location of successful eagle nests as determined by the presence or absence of young in July. The 101 nests represent all nest records for 7 seasons work on the lake (Table 5). They show a steady decrease in success of nests away from open spawning streams. The difference in success between nests less than 2 miles from streams and those farther away is significant ( $\chi^2=6.3$ ,  $DF=1$ ,  $P<0.05$ ). Despite this however, there is no evidence that nests tend to be built more closely to such streams than elsewhere (Table 5).

TABLE 2. Distribution of Bald Eagle nests by forest type on Besnard Lake, 1968-1974

Forest Type	Shoreline		No. of nests	Nests per mile of shoreline
	Miles	%		
Mixedwood with softwood dominant	37.9	15.4	13	0.34
Softwood	66.1	26.8	16	0.24
Mixedwood with hardwood dominant	36.9	15.0	6	0.16
Hardwood	71.3	28.9	8	0.11
Marsh or sparsely treed muskeg	34.1	13.8	0	0.00



**DISCUSSION.** Bald Eagles in the boreal forest of Saskatchewan and Manitoba seem to prefer to nest within 220 yards of large lakes and rivers. They prefer to nest on islands rather than on the mainland and prefer to face their nests towards the west and northwest, i.e., they tend to nest on east and southeast shores. For nest trees they prefer aspen and strongly prefer trees more than 70 feet tall in a softwood stand of moderate to low crown cover. Finally, nests within 2 miles of spawning streams that have open water in the spring show significantly greater success than those farther away.

Bald Eagles prefer shoreline habitat for nest sites in other areas also,<sup>1 5 10</sup> but a notable difference is evident in the more populated areas of Wisconsin and Minnesota where eagle nests are frequently located more than 1/2 mile from water — 36 percent of nests in the Bena district of Minnesota<sup>7</sup> (C. Sindelar *personal communication*). It is possible, therefore, that increased human presence on the lakes of northern Saskatchewan and Manitoba with cottages and other developments along the shoreline could lead to eagles choosing sites farther from open water.

Why eagles prefer large rather than small bodies of water for nesting is not clear. Factors such as the larger fishing area, taller nest trees, and greater productivity while young are in the nest are probably important. The presence of long shoreline up-drafts which facilitate travel to and from fishing areas may also be important. A considerable portion of eagle nests on small lakes were within 2 miles of large lakes.<sup>13</sup> The presence of the large lake may be the factor including this as these eagles could actually use the large lake with its presumed advantages just as a resident eagle.

There is a wide variation in the tree species Bald Eagles choose for nest

sites across North America. In Saskatchewan and Manitoba trembling aspen is most frequently used. In the Tongass National Forest of southeast Alaska, Sitka spruce (*Picea sitchensis*) is used most frequently for nests.<sup>2 9</sup> On San Juan Island, Washington, Douglas fir (*Pseudotsuga menziesii*) is preferred;<sup>10</sup> in northern Minnesota the birds prefer red pine (*Pinus resinosa*) and white pine (*Pinus strobus*),<sup>7</sup> and near Lake Erie they formerly preferred sycamore (*Platanus occidentalis*) and shellbark hickory (*Carya ovata*).<sup>6</sup> It is apparent from the variety of trees used that Bald Eagles react to the structure of the tree and the forest community rather than to the species itself.

Our observations at Besnard Lake show that in anything more than a light wind, eagles land on the nest facing into the wind; therefore, a nest needs to be approachable from several directions. This factor may explain their preference for tall, relatively exposed trees in open forest.<sup>8 10</sup>

The preference of eagles for nesting on islands rather than mainland is difficult to explain. The usual explanation for island nesting in waterfowl is that it protects them from predators, particularly mammals. This is probably not a factor in nest site selection by eagles. One possibility, suggested above, is the open, exposed site provided by islands; this allows ready access to the nest from many directions, depending on wind direction. Another possibility is that islands, being protected from the frequent lightning-caused fires of the boreal forest, usually have mature stands which provide the eagles with the tall trees they prefer. Islands are also close to fishing areas in all directions.

The direction that a nest faces is probably significant, as the eagles show definite preferences for some directions over others. However, they do not have equal opportunity to





Fig. 2. A bald eagle landing on its nest with a fish.

J. M. Gerrard

TABLE 3. Distribution of Bald Eagle nests by forest crown cover density on Besnard Lake, 1968-1974.

<i>Percent crown cover</i>	<i>Miles</i>	<i>Shoreline %</i>	<i>No. of nests</i>	<i>Nests per mile of shoreline</i>
Less than 30%	37.4	15.1	0	0.0
30 - 50%	53.1	21.4	27	0.51
50 - 70%	111.4	45.0	14	0.13
More than 70%	45.7	18.5	2	0.04

TABLE 4. Relationship between tree height and nest site of Bald Eagles on Besnard Lake 1968-1974.

<i>Tree height</i>	<i>Miles</i>	<i>Shoreline %</i>	<i>No. of nests</i>	<i>Nests per mile of shoreline</i>
Marsh of sparsely treed muskeg	34.1	13.8	0	0.0
Less than 30 feet	57.4	23.3	1	0.02
30 - 50 feet	52.0	21.1	8	0.15
50 - 70 feet	95.2	38.6	26	0.27
Above 70 feet	7.7	3.1	8	1.04



choose any direction. Glacial scouring of the precambrian shield in northern Saskatchewan is oriented from northeast to southwest and lake basins tend to be similarly oriented. Hence there is very little northeast or southwest shoreline and a disproportionate amount of northwest- and southeast-facing shoreline. This is evident in the map, particularly for the lakes which make up the Churchill River. Yet if we compare the number of nests on east and southeast-facing shoreline with west and northwest-facing shoreline, twice as many nests are on the latter as on the former (66 vs. 33, Table 1). The high proportion of nests along east shores may be because winds create favourable soaring conditions along a west-facing shoreline,<sup>4</sup> or because the east shore is more sheltered from the predominant east wind during incubation. It is also possible that exposure to the warmth of the south and west sun may be important in the spring as well.

**SUMMARY.** Bald Eagles in northern Saskatchewan and Manitoba show a close association with shoreline habitat. Nests are more frequently found along the shores of large lakes and rivers than along small waters. They are not found inland from water bodies. Island shoreline is used for nests more frequently than mainland shoreline. Nests on large islands and the mainland showed a significant ten-

dency to be situated on the east shores of water bodies. An analysis of the utilization of shoreline habitat for nests by Bald Eagles on Besnard Lake, Saskatchewan, revealed a preference for tall, relatively open mixedwood forest with softwood dominant. Nests within 2 miles of small streams entering the lake showed a higher breeding success rate than more distant nests, although the presence of the streams did not appear to influence the location of nests.

**ACKNOWLEDGEMENTS.** Our study has been supported financially by the Canadian Wildlife Service, the Institute of Northern Studies at the University of Saskatchewan, the Saskatchewan Department of Natural Resources, the Manitoba Museum of Man and Nature in Winnipeg, the Churchill River Wildlife Study Sector, Parks Canada, and by the National Research Council of Canada through its grant to W. J. Maher. Naomi Gerrard helped in the preparation of the manuscript. Mr. John Hastings of Besnard Lake provided information on streams that are open when Bald Eagles arrive in April.

<sup>1</sup>BROLEY, J. M. 1952. *The eagle man*. Pellegrine and Cudahy, New York, 210 p.

<sup>2</sup>CORR, P. O. 1969. *Bald eagle nest ecology*. Federal Aid in Fish and Wildlife Restoration. Alaska W-17-R-1, Work Plan B, Job 9. Small

TABLE 5. Nest success and proximity to spawning streams open in spring on Besnard Lake, 1968-1974.

Miles from stream	Active Nests			% with young
	Total	With young	Empty	
Less than 1	16	14	2	87
- 1.9	24	17	7	71
- 2.9	18	8	10	44
- 3.9	32	17	15	53
- 4.9	11	5	6	45



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- <sup>3</sup>GERRARD, J. M., and D. W. A. WHITFIELD. 1967. *Bald Eagle banding in northern Saskatchewan*. Blue Jay 25:177-183.
- <sup>4</sup>GERRARD, J. M. 1973. *Eagle census experiences in Canada*. In notes on a Bald Eagle nest survey workshop. Ed. C. R. Madsen, U. S. Dept. Interior.
- <sup>5</sup>HENSEL, R. J., and W. A. TROYER. 1964. *Nesting studies of the Bald Eagle in Alaska*. Canada 66:282-286.
- <sup>6</sup>HERRICK, F. H. 1934. *The American eagle*. New York. D. Appelton-Century Co., New York, N.Y., 267 p.
- <sup>7</sup>JUENEMANN, B. G. 1973. *Habitat evaluation of selected Bald Eagle nest sites on the Chippewa National Forest*. M.Sc. Thesis. Univ. Minnesota, Minneapolis.
- <sup>8</sup>MURPHY, J. 1965. *Nest site selection by the Bald Eagle in Yellowstone National Park*. Utah Academy of Sciences, Arts and Letters (Provo) Proc. Vol. 42, Part 2:261-264.
- <sup>9</sup>POULIN, E. M. 1968. *Bald Eagle nest ecology*. Federal Aid in Fish and Wildlife Restoration. Alaska W-13-R-3, Work Plan B, Job 9. Small game and furbearer investigations. Unpublished report.
- <sup>10</sup>RETFALVI, L. I. 1965. *Breeding behavior and feeding habits of the Bald Eagle (Haliaeetus leucocephalus L.) on San Juan Island, Washington*. M. Forestry Thesis. Univ. British Columbia, Vancouver. 193 p.
- <sup>11</sup>RICHARDS, J. H., and K. I. FUNG (Editors). 1969. *Atlas of Saskatchewan*. Univ. Saskatchewan, Saskatoon. 236 p.
- <sup>12</sup>ROWE, J. S. 1972. *Forest regions of Canada*. Canadian Forestry Service, Ottawa. 172 p.
- <sup>13</sup>WHITFIELD, D. W. A., J. M. GERRARD, W. J. MAHER, and D. W. DAVIS. 1974. *Bald Eagle nesting habitat, density, and reproduction in Central Saskatchewan and Manitoba*. Can. Field-Nat. 88:399-407.



# FIRST RECORDS OF THE ORCHARD ORIOLE IN SASKATCHEWAN

by E. MANLEY CALLIN\*

On three dates from June 19 to June 28, 1974, I stopped briefly at the P.F.R.A. dam over the river at the northern edge of the town of Fort Qu'Appelle and in an adjacent, heavily wooded area I heard a lively warble similar to the Purple Finch. The bird could not be seen from the perimeter of the woods and it was singing from a residential area. On June 29 I asked the residents, Constable John Lloyd and his wife, for permission to enter

the area for the purpose of observing and recording. They were most obliging and during the next hour taped about 35 songs but the bird was extremely shy and not once could I get a glimpse of it.

On June 30 Jack Lowe of Fort Qu'Appelle and on July 1 Frank Brazier of Regina assisted in the search for identity of the elusive bird which sang regularly but remained hidden in the upper portion of a very high spruce tree. During these two days more songs and calls were recorded.

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\*Fort Qu'Appelle, Saskatchewan



ed but, more importantly, a few screened views were obtained and it was determined that our bird was an Orchard Oriole, a new species for the province. However, it was not in the rich, mature plumage but in the much more modest attire of a first year male (almost all yellowish colour plus a black throat).

The Saskatchewan Museum of Natural History at Regina was notified and on July 3 two employees, Robert Long and Dwayne Harty, visited the area to confirm the find. More songs were recorded, the bird was becoming less shy and great patience enabled Long to take a few satisfactory pictures. On this occasion we had a few, very brief, views of a bird which we considered to be a female Orchard Oriole.

From July 4 to 12, I made daily visits, usually just stopping for a few minutes as I drove by, and the male was still singing regularly. On July 13, I spent about an hour in the area, heard young birds clamoring for food and watched both parents, mostly the male, carrying food to a particular branch. The nest could not be seen, as it was well hidden, and we did not attempt to climb the tree. However, the nest was about 25 feet above ground in a blue spruce about 35 feet in height and it was located half-way out on a branch about 6 feet long. Also, the nesting tree was so close to the male's favourite singing tree that the branches overlapped considerably.

Feeding of the young was again observed on July 14, 15 and 16 but the young left the nest after this time. On July 17 there was no activity in the nesting area but the usual sharp, alarm notes of the male were heard in a grove of maples about 25 yards to the east. Here I found the male flying around excitedly and after a brief search discovered one young moving from branch to branch in a fairly competent manner. The female was not seen and

only one young could be found. No birds were heard or seen on July 18 but, upon returning on July 22, I again found the male and one young. Apparently the family left the area on July 22 as no birds were heard or seen on later visits.

**Summary and Queries:** The male sang regularly from June 19 until the young left the nest on July 17. Most of the feeding was done by the female. As time went on, both birds were progressively less shy. Did they become accustomed to our presence or did the rearing of a family create a greater urgency than the fear of humans? Does the Orchard Oriole have a reputation as a shy bird? Orchard Orioles are so rare in Saskatchewan that one is inclined to speculate that this pair must have arrived together. This record involves a first year male and so also does Binnie's record of 1972 (see below). Are young males more aggressive and, therefore, more likely to advance into new territory? Do the Manitoba records of 1974 provide a possible answer? It may be worthy of comment that Saskatchewan is the only province where all three species or well-marked sub-species of Orioles to be found in Canada have now been recorded.

Although the above is the first confirmed record and nesting for the province, I have been advised of a very reliable and interesting record of the Orchard Oriole at Regina in 1972. By telephone and correspondence, Al Binnie informs me that in June of 1972 a first year male spent almost 2 weeks in the mixed woods at the Correctional Institute at Regina. Al and his wife, Betty, had listened to an unfamiliar song for nearly a week, finally observed and identified the singer on June 19 and it was last seen on June 25.

Al stated that almost always the bird remained hidden and was very difficult to observe. He alerted some Regina birders and several had come to see the bird but none of them were able to stay long enough to get a view of it. This is understandable when I recall the extreme difficulty that Jack Lowe and I had for 4-1/2 hours at Fort Qu'Appelle on June 30, 1974.

I would like to thank all those persons mentioned in this article as they have made a valued contribution and, in some instances, expended hours of time and patience. I would also like to thank Mrs. Lily Cochrane of Fort Qu'Appelle who contributed her professional skill in the typing of this report.





# RUFF IN CHURCHILL, MANITOBA

by Mrs. BARBARA A. RIBBLE\*

We had been in Churchill 10 days and had only picked up one lifer since the 4th day, a Harlequin Duck, so little did we expect this warm, breezy Sunday (June 23) to be the bonanza it turned out to be. To the three little Texas "ladies-in-tennis-shoes," however, every day was fascinating in this North country frontier town, the likes of which we had never seen. We were seeing the beautiful mating costumes and displays of the shorebirds, longspurs and others that winter with us in drab disguise. Tundra and muskeg were things of great wonder to which we were introduced by our friend Mrs. Blanche A. Smith, co-author of *Birds of the Churchill region, Manitoba*.

Cape Merry is the outstanding scenic attraction of the area and there had been migrating lines of geese and swans the preceding morning, in addition to the usual scoters, jaegers, Arctic Terns, and Snow Buntings. We decided to spend most of the day there, with stops, going and coming, at the ponds by the grain elevator which we had been checking daily since our first day, when we had seen several Sabine's Gulls. I almost missed the Hoary Redpoll picked up by my friends Doris Winship and Kay McCracken as I busily photographed Arctic Rhododendron. Unaware they had seen him, I perched on a rock an hour later where I could photograph redpolls coming to the edge of a pool



— and here he came with two Common Redpolls. A beautiful pink-breasted male, many shades lighter all over than the others, and with the unmistakable unstreaked rump. My day was made for sure. Gerald McKeating and the Massachusetts Audubon Society people had seen him, but we had not hoped to be so lucky.

We napped after lunch and checked the granary ponds about 3:00 p.m. Hudsonian Godwits, Short-billed Dowitchers, Winnowing Snipe, two Dunlin, three Semi-palmated Plovers, some Northern Phalaropes, Least Sandpipers, Arctic Terns, Bonaparte's Gulls and a Pintail. Not as many species as we had seen late Friday (June 21). The Turnstone was gone, not Baird's or White-rumped. No Stilts, Sandpipers or Semipalmated Sandpipers.

We had dinner with Mrs. Smith and

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\*2601 La Ronde Pkwy.,  
Austin, Texas 78731



he returned to the granary ponds with us about 8:30 p.m. Our Ruddy Turnstone was back and there were more lowitchers and Dunlin than before. Also Stilt Sandpipers and one or two Lesser Yellowlegs. Across the pond stood a single American Golden Plover. Between us and it standing on a rock was what I thought was a beautiful dark Hudsonian Godwit. As always, it captured my attention. Beautiful reddish bill, dark breast, it really looked black, and there was something funny about his shape . . . He shook his feathers, RAISED them, really, and hopped off the rock. As I heard a small voice behind me say, "Hey, what is that dark bird out there?" Some idiot (I suspect was me) began to shout: "A Ruff, a Ruff, it's a Ruff!"

And it *was* a Ruff, in appearance similar to the one farthest right in the drawing on p. 139 of The Crescent edition of Fisher and Peterson's *World of Birds*<sup>2</sup> or the dark one in right foreground in the May 1974 Audubon magazine, p. 15.<sup>1</sup> Many attempts at photography in poor light that "afternoon" and again the next morning (June 24) yielded identifiable but poor results. Three photos show the bird greening with raised ear-tufts. Adjacent Semipalmated Plover, Northern Phalarope and Short-billed Dowitchers give an idea of size. Two flight pictures failed to show the huge white ovals we saw on the tail.

Our party had a zoom 60, a Sr. telescope and two sets of 7 X 35 binoculars on the bird at distances of 100 to 140 feet or so. On the 23rd we observed the bird from about 8:30 to 8:15 p.m. We frightened him away in trying to get close enough to photograph. The next morning we watched him at the same distance from 8:30 to 8:15 a.m. While wading out into the pond to photograph the Ruff, I got within 75 or 80 feet. It finally flew away and was not seen again. The

following details of its appearance were recorded: bill — red-orange to red, a brilliant colour; legs — bright orange; ruff — black with white spots; ear tufts and head — black with white spots; back — dark brown with dark feather edging; underparts from legs back — white; tail in flight — two large, white oval spots.

Doris and Kay had seen a reeve (female Ruff) in the last 4 years or so in Corpus Christi, Texas, and Doris had also seen a Ruff in Europe, though it was not in as good a plumage as the Churchill bird. I've studied questionable reeves, but regard this sighting as my first positive, hence a "lifer" for me. In addition to Doris, Kay and myself, the bird was seen by Mrs. Smith (her second record for Churchill) and by ornithologist Dr. John New of State University of New York at Oneota and his wife. He kindly loaned me a tripod which I ungraciously used as a cane to keep me from sinking into the mud, and without which I'd have had virtually no pictures.

*Editor's Note:* The photos enclosed by Mrs. Ribble leave no doubt of the identification of the Ruff. The best one is reproduced here. The previous sighting of a Ruff at Churchill by Blanche Smith and others was made, by a strange coincidence, on June 23, 1970. Unlike the present sighting, which appears to have been a bird in breeding plumage, Ron Pittaway noted that the 1970 bird was closer to fall plumage (see *Blue Jay*, 1971: 61). As reviewed in the latter report, some authors have suggested that the Ruff may breed in this region. Thus, this new observation, the second sighting for Manitoba, has special interest.

<sup>1</sup>CHRISTIANSEN, ARTHUR. 1974. *Orgy at the lek*. Audubon 76: 12-15.

<sup>2</sup>FISHER, JAMES and R. T. PETERSON. (1964). *The world of birds*. Doubleday and Co., New York. 288 p. (p. 81)

<sup>3</sup>JEHL, J. R., Jr., and B. A. SMITH. 1970. *Birds of the Churchill region, Manitoba*. Spec. Publ. No. 1. Manitoba Mus. Man and Nature, Winnipeg. 87 p.







Piping Plover

R. E. Gehlert

## PIPING PLOVER NESTING AT DIEFENBAKER LAKE, SASKATCHEWAN

by PAUL C. RUMP\*

I was most interested to read Wayne Renaud's report on nesting records for the Piping Plover in Saskatchewan, which was published in the September issue of *Blue Jay*.

I would like to add Lake Diefenbaker as another breeding locality for this species. One of my favourite camping spots is on the west side of the Qu'Appelle Arm of Lake Diefenbaker. In 1974 we visited this sand dune area on the weekend of June 15 and 16. On the 16th, while on a shoreline walk with my family, we discovered two nests of the Piping Plover. The nests, which were about 1/2 mile apart, were located about 2 miles southeast of the former rail point of Aiktow. The nests were within pebble patches on the otherwise sandy beach. Each nest contained four eggs. The eggs were very well camouflaged amongst the pebbles

and we had to wait patiently at a distance for the birds to return to the nest before we eventually pinpointed and found them. At the second nest site, the adult bird went through an elaborate broken wing display to try to lure us from the nest. This, the camouflaged eggs, and the simple nest were ideal learning experiences for my young children.

## SHRIKE CAPTURES BLACKBIRD

by S. O. JORDHEIM\*

During the fall and winter months we are visited occasionally by the Northern Shrike which preys on House Sparrows around the yard. On October 30, 1974. I was surprised to see one ignore the sparrows which were circling in a dense group and give chase to a Rusty Blackbird.

At first the blackbird kept a healthy lead and did not seem perturbed about its pursuer, but the shrike kept doggedly on and, when getting close would try to grasp the blackbird which would then put on a burst of speed and get a lead of 20 to 30 feet. The chase continued around the yard and pastured several times at a height of 25 to 40 feet and, I would estimate, a distance of 2.5 to 3 miles. The blackbird was tiring but the shrike seemed to get stronger making more frequent attempts to capture his victim. Finally the shrike grasped it in the air and both birds plunged to the ground.

I was surprised to see the shrike attempt to capture an apparently healthy bird of this size. At no time did the blackbird attempt to get into trees or bushes as the sparrows do.

On another occasion a shrike captured a House Sparrow about 20 feet from where I was standing. It very quickly killed it by biting it in the throat area and then, seeing me, hastily flew away carrying its prey with it in its feet, the same as a hawk does.

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\*3320 Angus Street,  
Regina, Saskatchewan.  
S4S 1P8

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\*White Bear, Saskatchewan.



## BLACK-HEADED GROSBEAK AT PIERSON, MANITOBA

by RICHARD W. KNAPTON\*

On the evening of July 31, 1974, a Black-headed Grosbeak was mist-netted on the Pierson Wildlife Management Area, some 7 miles southwest of Pierson, Manitoba. The bird was examined in the hand by Dave Duncan of Winnipeg and by myself, and was then shown to Ralph J. Wang of Pierson, after which it was released.

The bird was distinguished from the Rose-breasted Grosbeak by its decidedly yellowish-brown underparts with very few streakings, and by its bright lemon-yellow wing-linings. It was most likely a female but could have been a first-year male, particularly as the underparts were so brightly coloured.

McNichol recently summarized known records of the Black-headed Grosbeak in Manitoba and listed only 5 records, covering some 12 birds to 1965.<sup>4 5</sup> No records from 1965 to 1974 have been uncovered. In Saskatchewan, the species has been recorded as far east as Estevan but is a decidedly scarce bird over much of the province, breeding sparingly in the Cypress Hills with a breeding record from Last Mountain Lake.<sup>6 2 7</sup> Indeed, the closest area to the Pierson Wildlife Management Area in which the Black-headed Grosbeak regularly occurs is along the Missouri River in North Dakota, some 150 miles southwest.<sup>1</sup> However, interestingly enough, hybrids between Black-headed and Rose-breasted Grosbeaks have been found only 60 miles south along the Missouri River, 16 miles southeast of Minot<sup>3</sup>, thereby providing a greater potential for pure Black-headed Grosbeaks or hybrids to occur in the extreme southwest, as opposed to other areas, of Manitoba.

I should like to thank R. W. Nero for information supplied to me for this article.

<sup>1</sup>AMERICAN ORNITHOLOGISTS' UNION. 1957. *Checklist of North American Birds*. Fifth ed. Baltimore.

<sup>2</sup>GODFREY, W. E. 1950. *Birds of the Cypress Hills and Flotten Lake regions, Saskatchewan*. Nat'l. Mus. Can. Bull. 120. Ottawa. 96 p.

<sup>3</sup>KROODSMA, R. L. 1974. *Species-recognition behavior of territorial male Black-headed and Rose-breasted Grosbeaks (Pheucticus)*. Auk. 91:54-64.

<sup>4</sup>McNICHOLL, M. 1965. *A possible sight record of the Black-headed Grosbeak in Manitoba*. Blue Jay 23:77-78.

<sup>5</sup>McNICHOLL, M. 1966. *Further note on the Black-headed Grosbeak in Manitoba*. Blue Jay 24:70.

<sup>6</sup>MITCHELL, H. N. 1924. *Birds of Saskatchewan*. Can. Field-Nat. 38:101-118.

<sup>7</sup>SYMONS, R. D., and R. W. NERO. 1965. *Black-headed Grosbeak breeding record for southcentral Saskatchewan*. Blue Jay 23:72-76.

## PROBABLE CINNAMON TEAL - BLUE-WINGED TEAL CROSS

by S. L. and J. A. WEDGWOOD\*

As waterfowl were returning in numbers, we drove west of Saskatoon on Sunday, April 27, 1975, paying special attention to the water bodies. On a slough (W1/2-18-36-8-W3) about a mile northwest of Rice Lake there was one duck unlike any we had seen before. Following half an hour of observation, debate and the consulting of field guides, we concluded this male bird was most likely a cross between a Cinnamon Teal and a Blue-winged Teal.

Our first impression was that we had come upon a Cinnamon Teal, a bird with which we were familiar, having seen it a number of times on the West Coast — but there were two differences. The body, breast and head were Cinnamon Teal: plain dark rusty red,

Dept. of Zoology,  
University of Manitoba,  
Winnipeg, Manitoba  
R3T 2N2

\*610 Leslie Ave.,  
Saskatoon, Saskatchewan.



the pate being darker, the tail black. However, there was a light flank patch which the Cinnamon does not have. On the Blue-winged Teal this patch is white; on the bird seen it was a light creamy-yellow or off-white depending on the observer. The second difference was on the face. The Cinnamon Teal's face is unmarked, whereas the bird we saw had a small white patch. This patch was less than a quarter the extent of the white crescent-shaped marking on the face of a Blue-winged Teal and was more frontally placed and not as sharply delineated as that crescent. Seen head on, both patches showed on the front of the face in line with the upper portion of the upper mandible, that is, in the region of the lores.

Wing markings were those of the two teals, which on flying birds are not separable in any event.

The bird was accompanying a female which was typical of the similar appearing Blue-winged and Cinnamon Teal females. While we were observing them, they were swimming, skip-flying and preening, movements which gave us many good views of the male.

Observing conditions were: 30-50 yards, mid-day, overcast; 10X and 7X binoculars.

Dr. J. B. Gollop, Canadian Wildlife Service, later informed us that there are records of crossing between the two species. One that he drew to our attention was a hybrid male taken in Utah, on June 9, 1947.<sup>2</sup> The description of the specimen is the same as for the Rice Lake bird with two exceptions: a white rather than an off-white flank patch and a full crescent face patch rather than a vestigial patch.

In the *Blue Jay*, 1971, Fred W. Lahrmann<sup>1</sup> reported on a hybrid Cinnamon Teal-Blue-winged Teal he had photographed near Regina in 1970. We examined the transparencies on file in the Saskatchewan Museum of Natural History. The only marked difference was in the colour pattern of the body, the bird we observed being closer to the Cinnamon colouration than was the one in the Lahrmann photograph. That is, the Rice Lake

bird's body was a deeper chestnut. It also lacked the Blue-winged Teal's dark spots, marks present on the Regina bird.

<sup>1</sup>LAHRMAN, FRED W. 1971. *Hybrid Cinnamon Teal X Blue-winged Teal at Regina*. *Blue Jay* 29: 28.

<sup>2</sup>WILSON, V. T. and J. B. VAN DEN AKKER. 1948. *A hybrid Cinnamon Teal-Blue-winged Teal at the Bear River Migratory Bird Refuge, Utah*. *Auk* 65: 316.

## TRAGEDY IN A WREN HOUSE

By C. G. RILEY\*

A pair of wrens seemed to be well on the way to success in raising a family in our nest house. Both adults had been busily carrying food in. The young were becoming vociferous, and their grotesque little heads could be seen inside the 1-inch entrance hole.

Then the male (?) abruptly disappeared. During the next 4 days the female (?) continued to feed the young and then she too disappeared.

After a day of enforced listening to the incessant hungry clamour, we broke down and began what we knew must be an ultimately futile program of feeding the cluster of noisy open mouths. Several times a day, flies, dewinged moths, pieces of garden worm, bits of ground beef, were hungrily snatched from forceps until appetites were seemingly satisfied for the time being. Two busy days of this culminated with the cool night (4 deg. F.) of June 30. The next morning all was quiet.

One young bird had fallen out of the nest house the day before, and we believed we had been feeding the three remaining ones. But when we opened the nest house we found *five* little corpses, for a total brood of six. All appeared equally developed, we

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\*1630 Wiggins Ave.,  
Saskatoon, Saskatchewan.



covered with down, and with wing and tail feathers well developed.

What caused the tragedy? Had the parents fallen victims to cats? Had they for some reason been forced to abandon their family? From the time the male (?) disappeared we were newly aware of a wren singing a few houses away. Could this be our wren? Unfortunately, we will never know the answers to these questions.

*Editor's Note:* Six is not a large clutch for

House Wrens; Peterson's Western Bird Guide gives 5 to 8 eggs as usual with 12 as maximum. As far as is known, only the male sings. House Wrens raise two and sometimes three broods a year. While the adults may stay with the young up to 2 weeks after they leave the nest, the female may leave them when they are only a week old to start her next clutch. In such cases the male usually raises the young successfully by himself. Adults sometimes change mates between broods and one male has been known to feed the broods of two females simultaneously. All of which leaves many alternatives to explain the tragedy.



Wise old owl

Al Grass



# PROBABLE RANGE EXTENSION OF THE OLIVE-BACKED POCKET MOUSE IN SASKATCHEWAN

by HUGH C. SMITH\*

The analysis of skeletal remains found in the pellets of hawks and owls has frequently been used to determine the foods of these birds. A by-product of such analysis is the occasional discovery of an animal that is new to an area.

While examining mammalian skeletal material recovered from pellets of Great Horned Owls, several mandibles of the Olive-backed Pocket Mouse (*Perognathus fasciatus*) were found. The pellets were collected from owl nest sites by Dr. C. S. Houston during May, 1969 and 1971. Identification was done by comparing the teeth with known specimens from the mammal collection in the Provincial Museum of Alberta and confirmed by Dr. John E. Storer, Curator of Earth Science, Provincial Museum of Alberta.

The nests were located in the vicinity of the following places (numbers refer to sites marked on map): (1) Bladworth, (2) Junction Highways 2 and 5, 40 miles east of Saskatoon, (3) 3 miles southwest of Birch Hills, (4) Blackstrap Reservoir, (5) southeast of Kenaston, (6) Watrous, (7) Meskanaw, (8) east of Yellow Creek, and (9) west of Simpson. Several of these locations fall within the known range of this mammal as reported by Nero<sup>2 3 4 5 6</sup>. They are, however, new localities within this range. The occurrence at



Range of Olive-backed Pocket Mouse with additional records.

Birch Hills, Meskanaw, and Yellow Creek is unexpected and constitutes range extension of approximately 100 miles northeast of the known range. The occurrence at Birch Hills also marks the northernmost record of a heteromyid rodent.

\*Provincial Museum of Alberta, Edmonton, Alberta.



The Olive-backed Pocket Mouse is a member of the Upper Sonoran Life Zone.<sup>8</sup> It is usually associated with sandy soils of the grasslands, but may be found on the edge of the Aspen Parklands.<sup>1</sup> I am not familiar with these northern localities so I am not able to comment on the habitat occupied by these mice. Because the pellets were recovered from three nests at three separate locations during the nesting season, I assume that the mice came from a location close to the nest sites rather than being carried in from some distant point, and, therefore, constitute a valid range extension. The type of habitat used and density of mice in the area will have to wait on someone going into the area and doing a comprehensive survey.



## ROCKY MOUNTAIN WILD FLOWERS

By. A. E. Porsild

Illustrated by Dagny Tande Lid.  
National Museum of Natural Sciences,  
National Museums of Canada and Parks  
Canada,  
Department of Indian and Northern Affairs,  
Ottawa.  
154 pp., 1974, \$5.00.

This volume is, as its author says, designed for the use of the visitor to Jasper, Banff and Waterton National Parks, to introduce him to the commoner and more spectacular wild flowers of the area, with emphasis on the alpine and subalpine zones (above and just below timberline). Of about 2,250 plants known to the author — and few will know more — from the national parks of the Alberta Rockies, 250 odd have here been illustrated and

- <sup>1</sup>BANFIELD, A. W. F. 1974. *Mammals of Canada*. University of Toronto Press, Toronto.
- <sup>2</sup>NERO, R. W. 1957. *The pocket mouse in Saskatchewan*. Blue Jay, 15:172-173.
- <sup>3</sup>NERO, R. W. 1958. *Additional pocket mouse records*. Blue Jay, 16:176-179.
- <sup>4</sup>NERO, R. W. 1959. *Some recent mammal records*. Blue Jay, 17:169.
- <sup>5</sup>NERO, R. W. 1965. *Recent pocket mouse records for Saskatchewan*. Blue Jay, 23:36-38.
- <sup>6</sup>NERO, R. W. 1965. *Three pocket mouse records*. Blue Jay, 23:173.
- <sup>7</sup>RICHARDS, J. H. (ed.). 1969. *Atlas of Saskatchewan*. Published by the University of Saskatchewan, Saskatoon.
- <sup>8</sup>SOPER, J. D. 1964. *Mammals of Alberta*. Hamly Press, Edmonton.



described and some 180 more have been mentioned with field marks, but not illustrated. Besides visibly flowering plants a selection of ferns, conifers, rushes and even grasses and sedges have been treated.

A. E. Porsild, Curator Emeritus, National Herbarium of Canada, has been studying the northern, arctic and alpine flora for the last 45 years or more and has published widely upon this subject at both scientific and popular levels. His illustrator, Mrs. Dagny Tande Lid, contributed the drawings both for Hultén's monumental "Flora of Alaska" (1968) and Porsild's own "Flora of the Canadian Arctic Archipelago" (1957).

The pictures are in full colour, thus they must have begun as paintings. Almost all have come out in the printing true to life. (*Agoseris glauca* is shown with pink ligules; all material I've ever seen had yellow flowers.) From the scale given beside the pictures, one can estimate the size of the plant in life. With these illustrations it should be easy to recognize living material of the species shown. For this task, a good botanical drawing — as these are — is superior to a



photograph since the important characters may be made to stand out from a morass of detail.

One minor complaint may be brought up. A few plants appear here under scientific names other than those in most common use. I saw a picture of a lily indistinguishable from our Prairie Lily, *Lilium philadelphicum* var *andinum*, but was a bit puzzled in that its name appeared on the opposite page as *Lilium montanum* A Nels. A check of Moss' "Flora of Alberta" showed that the two names were synonyms, however. Another example is that the three plants treated here in the genus *Melandrium* are in most

North American floras placed in the genus *Lychnis*. This and similar examples will cause the beginner some confusion should he cross-check with other floras.

The 5" x 9" dimensions of the book fit it for carrying in a pocket, and the plastic-coated cover should resist some moisture; thus it has been made for use in the field.

The book appears to me to be excellently adapted for its author's purpose of introducing the beginner to the flora of our national parks in the Cordillera of Alberta. — *John H. Hudson*, 103 Richmond Crescent, Saskatoon, Saskatchewan.

## NATURE IN FICTION

by DIANE SARICH\*

Your local library has many novels dealing with the fascinating world of nature. These provide "a handy escape from our world of freeways and high-rises, letting readers all over the world share in a new discovery of man's natural heritage". The following are a few from the Saskatoon Public Library.

ALDRIDGE, James. *The marvelous Mongolian*. 1974. 183 p. A young stallion from the Mongolian uplands is taken to Wales in hopes of establishing a colony of Przewalski horses, an ancient breed in danger of extinction.

Y A365.

BICKHAM, Jack M. *Baker's hawk*. 1974. 233 p. Billy Baker, 11, rescues a baby hawk from a fox and with the help of a mysterious old mountain man nurses it into a proud adult bird trained to respond to a homemade whistle.

B583.

BODSWORTH, Fred. *Last of the curlews*. 1955. 128 p. A year in the life of a lone Eskimo Curlew, following his long flight from the Arctic to the Antarctic and back in response to his migratory urge and in desperate search for a mate.

598.2/B668.

BODSWORTH, Fred. *The sparrow's fall*. 1967. 255 p. Jacob Atook sets out on a long trek in search of game when the cold forces the caribou to migrate for food.

B668.

BODSWORTH, Fred. *The strange one*. 1959. 400 p. A poignant novel about a young naturalist banding geese in the bleak muskeg country of James Bay, an Indian girl, and a wild barnacle goose blown far off course by a hurricane.

B668.

BROWN, Joseph. *The forests of the night*. 1974. 278 p. A wounded jaguar, now including cattle and men as his victims, is hunted down in the primitive Sierra country of Mexico.

B878.

BURNFORD, Sheila. *The incredible journey*. 1961. 145 p. Two dogs, an English bull terrier and a Labrador retriever, and a Siamese cat find their way home through 250 miles of northern Ontario wilderness.

B965.

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\*Saskatoon Public Library,  
311 - 23rd Street East,  
Saskatoon, Sask. S7K 0J6.



LARKSON, Ewan. *The running of the deer*. 1972. 277 p. The life of a red male deer from his birth to his majestic maturity is told along with the story of the Seven Seas Hunt where two stags and a number of hinds are run to their death. C613.

LARKSON, Ewan. *Syla, the mink*. 1968. 126 p. The life story of a mink that escapes from the fur farm where she was born and makes a new home in a remote valley where she must learn the laws of survival. C613.

CKERT, Allan. *The Great Auk*. 1963. 202 p. The life and death of the last Great Auk — diving for food or safety, the storms at sea and on land, and its massacre by human hunters. E19.

CKERT, Allan W. *Incident at Hawk's Hill*. 1971. 1973 p. Seven-year-old Benji wanders away from his farm home and is adopted by a female badger. After several weeks they are rescued and return home, inseparable friends. Y E19.

CKERT, Allan W. *The silent sky*. 1965. 243 p. A fictional account of how the Passenger Pigeon, whose greatest menace was man, was wiped off the face of the earth. 598.65/E19.

LLIS, Melvin. *The wild runners*. 1970. 183 p. A young Indian half-breed, thinking there is no hope for him in the white man's world, sees himself in a puppy he finds that is half coyote, half hound. E47.

RISON-ROCHE, Roger. *The raid*. 1964. 244 p. A raid is made on a herd of reindeer and more than a thousand of the animals are stolen, setting off a feud between two rival clans of Lapps. F917.

GEORGE, Jean C. *Julie of the wolves*. 1972. Winner of the 1973 Newbery Medal, this is the story of a young Eskimo girl who runs away from home, gets lost, and becomes accepted by a pack of arctic wolves. Y G348.

YDE, Dayton O. *Strange companion*. Clarke, Irwin, 1975. The story of a young boy, his adopted baby whooping Crane and the adventures they have while lost in the North.

On order.

MANNIX, Daniel P. *The healer*. 1971. 214 p. A dog and a wild coyote are hunted as werewolves by a superstitious group of Pennsylvania farmers. M284.

MANNIX, Daniel P. *The killers*. 1968. 255 p. The story of a life-long duel between two birds — Whitehackle, a fighting cock, and Ishmael, a female Cooper's Hawk. 598.2 M284

MURPHY, Robert. *The mountain lion*. 1969. 128 p. Seeta, a young and inexperienced cat, is driven by her mating instinct out of her usual territory and is exposed to new dangers. Y M978.

MURPHY, Robert. *The Peregrine Falcon*. 1963. 157 p. The story of the first year in the life of a falcon, Varda, and the perilous journey from her birthplace in northern Canada to the Florida Keys. M978.

MURPHY, Robert. *The pond*. 1964. 254 p. The winner of the Dutton Animal book award for 1964, this is the story of the day-by-day adventures of a boy in the woods who is learning to understand dogs, coon hunting and human beings. M978.

MURPHY, Robert. *The stream*. 1971. 205 p. The story of a natural, unspoiled, 2,000 acre tract of woodland and stream and the animals and birds that live there. Y M978.

ROTHERY, Brian. *The crossing*. 1971. 152 p. A scientist, on a research mission in the Arctic, finds himself battling the harsh elements when his new store, by mistake, has been air-dropped miles away. R846.

RUSSELL, Franklin. *Corvus the crow*. 1972. 116 p. A year in the life of a crow beginning with the harsh days of winter when he was forced by crippling injuries to remain at the pond and become one of the balancers of life. Y R963.

SITTS, Paula E. *The glad season*. 1967. Twelve-year-old Davey and his grandmother move from Seattle to live in the remote and unsettled cariboo country of British Columbia. S623.





**YAMNUSKA.** Introductory studies of a natural area with proposals for its protection and use..

Yamnuska Natural Area Study Committee,  
Bow Valley Naturalists, Box 1693, Banff,  
Alta. T0L 0C0  
1974, 46 pp., \$2.00

The traveller who approaches the Rocky Mountains from Calgary along the Trans-Canada or 1A Highway usually remembers the first mountain with its steep rock face dominating the entrance to the Canmore Corridor of the Rockies. This mountain, officially renamed Mount Laurie in 1961, after John Laurie who helped establish the Indian Association of Alberta and completed a Stoney Indian dictionary, is known to many as Yamnuska.

This mountain and the surrounding area to the south have been under study during 1974 by members of the Bow Valley Naturalists with assistance from some members of the Calgary Field Naturalist's Society. The results of their study have now been put together in a report in support of their earlier proposal that the Yamnuska area be protected through some form of natural area legislation, possibly as an addition to the Bow Valley Provincial Park, which is on the opposite side of the Bow River but does not include any mountain zones.

The report, which includes a useful map of the proposed Yamnuska Natural Area, is divided into five sections, by far the largest of which is the Natural History section. It includes a report by L. E. Jackson on the geologic features which describes the McConnell Fault thrust which brough Late Cambrian limestones into juxtaposition and superposition with Late Cretaceous sandstone, coal and shale beds, which are 350 million years younger than the limestone. He also notes the excellent examples of glacial and post glacial features, including drumlins, moraines, kames, kettles and eskers, all of which can be viewed from the base of the cliffs of Mt. Yamnuska. The authors of the report on the forests and habitat areas are not noted, but the naturalist will find that for

each major habitat type notes are provided on the physiographic features, the major plant species by common name, and the birds and mammals recorded in the area. Further information on the mammals and birds, although not surveyed extensively, can be found on another page of this section. One appendix is an annotated list of 74 species of birds. The other provides an annotated list of the vascular flora, with a total of 300 species, including 93 not listed for the adjacent Bow Valley Park. This list indicates the botanical diversity that can be found in this interesting transitional zone between the prairie foothills/aspen parkland and the subalpine/alpine zones of the Rocky Mountains. The report also includes mention of the moths, skippers and butterflies collected in the area on brief trips by the author, C. D. Bird and others. Although notes are provided for only 29 species, Dr. Bird predicts that at least 300 moths, skippers and 50 butterflies will eventually be found in the area.

Other sections of the report include historical notes, archaeology, present uses of the area (recreational and otherwise), and an assessment and recommendations for the area, the latter by R. C. Scace, a Recreation and Land Use Planning Consultant. There is also a report on rock climbing at Yamnuska by Margaret Gmoser. The mountain and cliff faces are a favorite with climbing groups because of their accessibility from the highway, long climbing season and relatively good rock.

This report will be useful to naturalists familiar with this area and would provide a useful guide for those passing through who might consider spending a few hours there. If the report is reprinted some attention should be given to correcting typographical errors, the most noticeable being the duplication of the last line on page 13.

The appearance of this study in report form is most welcome and the Yamnuska Natural Area Study Committee under the chairmanship of



Robert N. Smith of Seebe are to be commended for their efforts. I hope that they will be further rewarded when the area is afforded some protection. Their report documents well the recreational and interpretive values of this area, as was recognized by the Alberta Environment Conservation Authority in their "Land Use and Resource Development in the Eastern Slopes: Report and Recommendations," September 1974, page 134. John M. Powell, Northern Forest Research Centre, 5320 - 122nd Street, Edmonton, Alberta.

## OWLS

by Tony Angell  
University Washington Press,  
Seattle, Washington.  
1974. 80 p. \$12.95.

Angell's *Owls* is not for "bird lovers" only; it is a book that can be appreciated and enjoyed by almost anyone. Angell has combined his talent as an artist, his personal interest in owls and his sensitivity as a teacher to form a book that fully brings out the fascination of these amazing birds.

As an artist, he has the unique talent of capturing every detail of his subject. For example: his marvellous drawing of the Snowy Owl shows the covering of this bird as furry textured rather than the expected feathery effect in such amazing detail. Round deep eyes with the slight tilt of the head; low, lid-drooped looks; sleepy squints; the various attitudes of the owls thus bringing out these birds' beauty and intelligence more fully than any photograph could.

The sketches effortlessly draw one's attention to the text. What is this? An owl thrown on his back in the struggle with a rat!

His writing is not an accumulation of cold scientific data but, pleasant, easy reading. In narrative form he describes their habitats, and lifestyle and relates his experiences with the various types of owls. Even his reference to the intricate sensory

systems that aid the owl in hunting is exciting reading.

I would suggest that this book be placed in school libraries so that the young can have easy access to it and, thereby, gain an appreciation of these beautiful birds.

Certainly, Tony Angell is an immaculate perfectionist.

A delightful book for all! — *Esther Solsberg*, 2434 Cairns Avenue, Saskatoon, Saskatchewan.

## Letters

### ANOTHER SASKATOON WOOD THRUSH

by PAT O'NEIL\*

It gave me great pleasure to see, again, a Wood Thrush which visited my back yard three days in a row — April 27, 28, 29, 1974. It seemed to be travelling with a fairly large group of Hermit Thrushes. Unfortunately, they did not stay in the yard for periods sufficiently long for me to notify other birders.

It may be of interest to recall that it was this same back yard that drew the Wood Thrush May 24, 1973, when he stayed feeding for a couple of hours. There was sufficient time to call in several well-known birders all of whom identified the bird as a Wood Thrush. The sighting was reported as the first authenticated record for Saskatchewan (*Blue Jay*, March, 1974, Vol. 32. No. 1).

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\*1125 Elliott Street,  
Saskatoon, Saskatchewan.



## BUFFALO RUBBING STONE

I am enclosing a picture of a buffalo rubbing stone. The size of the black Lab dog will give you an idea of the size of the stone, which was used for generations by buffalo with mud and sand on their hides. It became smoothed and polished and it still glistens in sunlight. There are no other rocks this size on the prairie where this one stands.



North of the above stone about 40 feet there is an old hearth or ceremonial stone ring about 3 feet in diameter, indicating the rubbing stone had some religious significance to the people who occupied this particular part of the country where buffalo were so abundant in their day. To the south one can still discern an old path leading to a spring 60 feet from the rubbing stone. The spring is still active, no doubt the buffalo came to drink at this spring and to wallow at the rubbing rock.

This site has been assigned Borden site FA NA 1 by the government. The location is about 1/2 mile south and 1/2 mile west of Clair. The rock is situated a few hundred yards from road that leads by a land fill and can be spotted from road quite easily. Interested parties may contact me and I shall assist in any way I can. — J. H. Yerex, Clair, Sask. S0A 0N0.

## LEN KOFFSKI'S GROSBEAKS

I wondered if the following observations would be of interest to the *Blue Jay*:

In this neck of the woods — Nipawin, in northeast Saskatchewan, several people have been putting out food for the Evening Grosbeaks. Mr. Len Koffski, 88 years old, is one. He places sunflower seeds on a picnic table in the backyard opposite the window and watches the birds feed while he, himself, eats breakfast.

The visitors number from about 25 to 50 or 60, with a few English Sparrows, and occasionally three or four little redpolls picking up the chips of the kernels that fall while the grosbeaks are eating.

A dozen or so Bohemian Waxwings were also around at intervals eating the fruit on the ornamental crab, and the grosbeaks would light on the snow beneath and pick up the bits, presumably of the pits, that fell as the waxwings stripped off the fruit. Two Blue Jays also visited the seed table occasionally. When they did, they were monarch of all they surveyed and the grosbeaks beat a hasty retreat.

The interesting part about the grosbeaks was that, occasionally, there was an apparent albino among their number. It was an off-white, with faint lemon yellow on the back of the head and neck, and just a little faded gray on the wings and tail. Another oddity was a female grosbeak with a tuft-like growth on the top of its head, a little to the side, which must have been the result of an injury. And during the last few days that the birds were around, there was one which had lost a leg at the hock.

Mr. Koffski has had a great deal of pleasure and entertainment from observing his visitors. — Mrs. Lucy Britton, Box 2142, Nipawin, Sask. S0E 1E0



## 30 Years Ago

The July-August-September issue of the third volume of the *Blue Jay* — then the official bulletin of the Yorkton Natural History Society — contained the following news items among its 10 pages: That this would be the last issue for which Stuart Houston, secretary of the Society, would serve as writer and publisher because he would be starting a premedical course in the fall. Seventy-five copies of the first issue were run off and 400 copies of this, the 12th issue. (There will be 700 copies of the September, 1975, issue.) That Kerry Wood was president of the Alberta Natural History Society. This spring the Alberta Society distributed 1,500 Bird-box sheets to 50 Alberta schools".

There was an article by Lloyd Carichael appealing "to those who love nature to protect the (western red) lily before it is too late" . . . Screech Owls, 'hypothetical species' in Mitchell's 1928 bird list, seems slowly becoming more common in the wooded areas in the eastern part of the province" . . . A Hudsonian Curlew was seen at Melville by L. T. McKim on May 20, 1945 . . . Mourning Doves appeared to be increasing in Saskatchewan . . . For the second consecutive year, Lloyd Petersen, Officer-in-Charge of the Dominion Entomology Laboratory at Indian Head, asked for volunteers to send in specimens of insects damaging shrubs and trees in the Prairie Provinces . . . Woodchucks are becoming more common in the southern part of the province . . . Jumping mice were reported from Leech Lake and there is an unconfirmed report of another killed by a car near Tessier . . . R. H. Carter, Jr., of Muscow had banded 710 birds of 71 species since he started banding in 1923. About one-quarter (1,172) of the total was made

up of House Wrens. One of his Cowbirds, banded on June 13 was found dead 1,000 miles away 18 days later in New Mexico. Sixty of 79 adult House Wrens banded in 1927 and 1928 returned to nest the following year.

### SNHS SPECIAL PUBLICATION NO. 8

**Blue Jay Index, Volumes 19 to 27  
1961 - 1969**

The second index for the *Blue Jay*, by Patricia O'Neil, is off the press. It has been printed as a memorial to the late Mrs. Marion Nixon of Wauchope and financed by donations in her memory.

This 68-page publication contains more than 17,000 references. Copies are available at \$3.00 each from the Blue Jay Bookshop, Box 1121, Regina, Sask.

### SNHS SPECIAL PUBLICATION NO. 9

**Birds of the Rosetown - Biggar  
District, Saskatchewan**

By Wayne E. Renaud and  
Don H. Renaud.

Published by the Saskatchewan Natural History Society, Regina, August 15, 1975.

This, the ninth Special Publication of the Saskatchewan Natural History Society, is a distinguished addition to the Society's series, and one that adds significantly to our knowledge of



bird distribution and behaviour in Saskatchewan.

As stated in Dr. Houston's foreword, it "is an exemplary publication in the true sense of the word. It serves as an example of what can be done by amateurs in general and by young people in particular." It records the amazingly complete observations of two brothers who grew up in the now-defunct hamlet of Valley Centre, and who covered the area with increasing thoroughness during their high school and university years. Wayne graduated in Biology in 1974 and Don is completing his classes in urban and regional planning. Their observations are augmented by those of two Biggar students, Guy and Rodney Wapple.

This 120-plus page book is available from the Blue Jay Bookshop, Box 1121, Regina, Sask., for \$4.00.

#### **CHURCHILL RIVER BIRDS**

"Birds of the Churchill River-Hanson Lake Road" is presently in the works. Included is the Churchill River from Stanley Mission to the Manitoba border and all of the Reindeer River. Anyone having bird records from these areas is invited to submit them for inclusion to Gary Anweiler, Box 555, Melville, Saskatchewan, or Harry Stelfox, Biology Department, University of Saskatchewan, Saskatoon.

#### **MEETINGS**

**NATIONAL OUTDOOR AND ENVIRONMENTAL EDUCATION CONFERENCE**  
October 1-5, 1975.

Fort Qu'Appelle, Saskatchewan.  
Contact Dora Keller, Saskatchewan Outdoor Education

Association, Box 3461, Regina, Saskatchewan. S4P 3J8

\* \* \*

#### **3rd ANNUAL CANADIAN INTERPRETERS WORKSHOP**

October 18-22, 1975

Brandon College Agricultural Extension Centre. Offers something for everyone involved in interpreting our cultural and natural heritage. Contact Finlay McRae, Box 488, Brandon, Manitoba. R7A 5Z6

#### **S.N.H.S.**

**The 27th annual meeting of the Saskatchewan Natural History Society will be held at the Yorkton Regional High School on October 17 and 18, 1975.**

To be considered at the meeting, all resolutions must be sent by October 1, 1975 to:

Frank Switzer,  
1301 Shannon Road,  
Regina, Saskatchewan,  
S4S 5K9

Send your suggestions for nominations to:

Margaret Belcher,  
2601 Winnipeg Street,  
Regina, Saskatchewan,  
S4P 1H8.

#### **JOHN LANE DIES**

Members will be sad to learn of the death of Dr. John Lane on July 23, 1975, in Brandon, at the age of 72.





**SASKATCHEWAN NATURAL  
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